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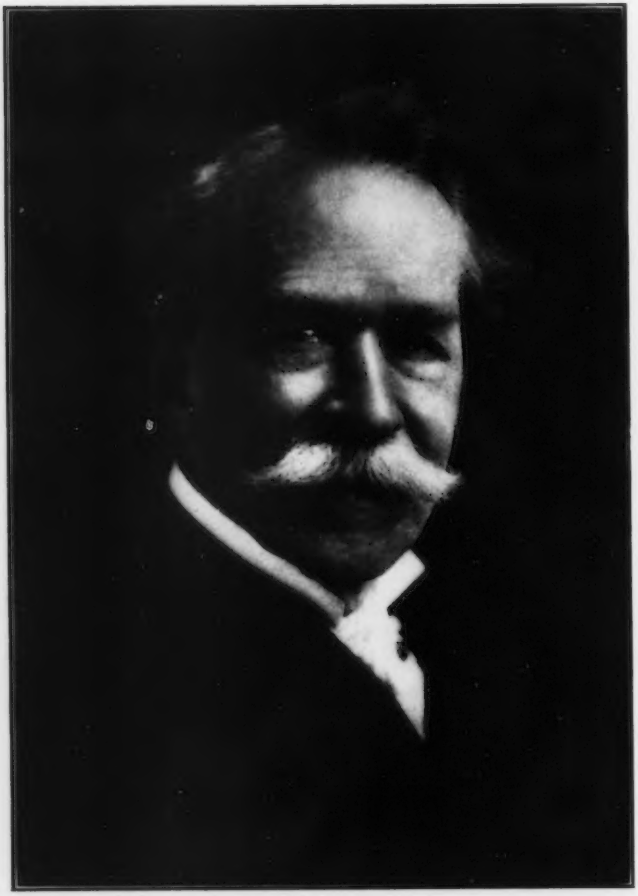

OTTO HEIDEMANN.

(PHOTOGRAPH BY J. H. PAINE, U. S. BUREAU OF ENTOMOLOGY.)

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XXVIII. JANUARY, 1917. NO. 1.

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Otto Heidemann.

(Plate I)

We give in this number a portrait of the well-known Hemipterist, Otto Heidemann, for many years a member of the United States Bureau of Entomology, and Honorary Custodian of *Hemiptera* in the National Museum, who died November 17, 1916, after an operation at the Homeopathic Hospital in Washington, D. C.

Heidemann was born in Magdeburg, Germany, on September 1, 1842. He learned the art of wood-engraving and practiced this profession in Leipsic, Vienna, Munich, Stuttgart and Berlin until 1873, when he came to this country and established an engraving office in Baltimore. In 1876 he moved his office to Washington and in the following years furnished many illustrations for various Government publications. In 1880 he entered the office of Captain G. Wheeler's Geographi-

cal Survey west of the 100th Meridian and in 1883 was appointed engraver in the U. S. Department of Agriculture. From this time his work became known in Entomology and a large number of excellent illustrations of economic insects, published by the Department are the work of Mr. Heidemann.

With the development of photo-engraving his art ceased to be useful and in 1898 he obtained a position as assistant in the Bureau of Entomology becoming a specialist in Hemiptera, the study of which he had taken up only half a dozen years before, under the guidance and inspiration of his friends Albert Koebele, E. A. Schwarz and Theodore Pergande.

Although he thus began his entomological studies when he was well beyond fifty years of age, he applied himself with such zeal to the science, that he became known all over the world as an authority on Hemiptera.

Heidemann was a member of the Entomological and Biological Societies of Washington, and of the American Association of Economic Entomologists; he was a charter member of the Entomological Society of America and a Fellow of the American Association for the Advancement of Science. He was elected President of the Washington Entomological Society for two consecutive years 1909, 1910.

His entomological writings number about 35 titles.

Mr. Heidemann is survived by his wife, Mrs. Mica Heidemann, well known as a sculptress and as a maker of insect models.

X.

A Further Note on Zonocerus elegans (Orth.).

[Since the publication of the article on this grasshopper in the News for November, 1916, pages 420-421, the following has been received.]

There is usually one generation a year, but a partial second one, consisting of a few individuals reaching the last nymphal instar, is found in favorable years and a few localities. The first instar nymphs appear from the middle of September onwards, being plentiful early in October. The five nymphal stages are completed by January 1. The difference here noted is due to my previous observations covering only one season and that an exceptionally favorable one.—S. G. RICH, Adams Mission Station, Natal, South Africa.

New and Noteworthy Forms of North American Miridae (Hemip.)*

By HARRY H. KNIGHT, Ithaca, New York.

In working over considerable miscellaneous material in the family *Miridae* the writer has found a few species that are of particular interest and takes occasion to present part of his findings in the present paper.

Sericophanes ocellatus Reuter.

While studying *Miridae* in the collection of the United States National Museum the writer found two specimens bearing the label, "Texas Belfrage" which evidently represent original type material of this species. These specimens came from the C. V. Riley collection and no doubt were acquired from Mr. Belfrage at a time when that collector sent material to various entomologists and museums. Dr. Reuter described the genus *Sericophanes* and the single species *ocellatus* in his paper of 1875, "Capsinae ex America boreali in Museo Holmiensi asservatae descriptae ab" (Öfversight af Kongl. Vetenskaps-Akademiens Förhandlingar, 1875, No. 9, Stockholm), from an assemblage of North American Hemiptera collected by Mr. Belfrage and which in some way were acquired by the Stockholm Museum. It was this wholesale shipment of North American Hemiptera to European specialists in the early days that resulted in the description of many of our species. This loss of types to American students has made it difficult to always name our species accurately and some may never be known with certainty until comparison is made with the type specimens.

The following notes are taken from a study of the above type material and are given here for comparison with the northern species described below:

♂. Length to tip of membrane, 2.6 mm.; length of pronotum .43 mm., width at base .71 mm., apex .37 mm.; head, width across the eyes .60 mm., width of vertex .25 mm.; color of head, thorax, legs and ab-

*Contribution from the Department of Entomology of Cornell University.

domen, yellowish brown, or "dilute cinnamomeus" of Reuter. The ocellate spot on the clavus and the pruinose bands across the corium are quite similar to *noctuans* but the ground color is lighter.

Dr. Reuter, 1910, placed the genus *Sericophanes* in his division *Cremnocephalaria*, a group having the claws destitute of arolia. Perhaps Dr. Reuter had poor material from which to work since the present writer finds after observations on

Fig. 1.—*Sericophanes noctuans*, showing the claws and type of arolia.
Fig. 2.—*Largidea davisi*, tarsus and claws, showing type of claws and absence of arolia.

several specimens with the aid of the binocular microscope that the claws bear free arolia with converging tips (fig. 1). This type of arolia places the genus close to *Pilophorus* and *Ceratocapsus* and in the tribe *Orthotylini* of Mr. Van Duzee's recent tables.

Sericophanes noctuans new species.

Larger and darker colored than *ocellatus*, but otherwise bearing a close resemblance.

♂. Length, 3.6 mm. *Head*: width across the eyes .71 mm., width of vertex .28 mm., length .45 mm., height at base .37 mm.; eyes large and coarsely granulated, height .43 mm., dark purplish brown in color; jugae, lorae, and tylus reddish brown, the jugae showing red most plainly; vertex dark chestnut like the pronotum, smooth shining, carina nearly horizontal and turning forward at each side to meet the eye, slightly depressed bordering the carina; base of the tylus with a prominent hair at each side. Rostrum scarcely attaining the posterior margin of the hind coxae, yellowish brown, basal segment dark brown, the apex blackish.

Antennae: segment I, length .25 mm., yellowish brown, with three or four prominent hairs on the inside; II, length 1.25 mm., yellowish brown, slightly darker toward the apex; III, length .88 mm., dark fuscous to blackish, brownish at the base; IV, length .60 mm., slightly flattened, dark purplish to blackish; all the segments with very fine pale pubescence.

Pronotum: length .57 mm., width at base .88 mm., apex .37 mm.; dark chestnut or blackish, smooth, shining, strongly declivitous, devoid of calli, collar narrow but distinct, lateral margins of the disk indistinct, rounded. Scutellum same color as the pronotum, basal lobe prominent, strongly sloping backward, sharply cut away at each side; apical lobe small, moderately arched and rounded at the sides, very finely tranversely rugose. Sternum dark chestnut, shining; lobe of the metasternal orifice projecting laterally very strongly.

Hemelytra: width at tip of corium .91 mm., across the middle only .77 mm.; clavus dark chestnut brown on the basal half and tip, golden brown bordering the scutellum, pruinose on the exterior basal half; apical half of the clavus with a cream colored spot which extends laterally to the margin; corium dark velvety brown, the cuneus and inner apical angles of corium with dark golden brown; base of corium, a narrow band across the middle, and exterior half of the apex, pruinose; sparsely covered with golden hairs; cuneus poorly defined from the corium inside of the fracture, scarcely deflected; membrane evenly clouded, pale across the basal half of the large cells and bordering the apical one-third of the cuneus.

Legs: fore coxae yellowish brown like the femora, darker at the very base; middle coxae dark brown; hind coxae pale, brownish at the base; femora dark yellowish brown, anterior pair paler; tibiae dark brown; tarsi pale brown, the apex and claws blackish.

Venter: long and slender, noticeably flattened on the basal half, first two segments yellowish brown, beyond this dark chestnut to blackish, shining; genital claspers small.

Described from 9 ♂ ♂, June 22 to Aug. 10, Batavia, New York, all of which came to the light in the writer's laboratory; 1 ♂, July 2, McLean, New York.

Type: ♂, Aug. 8, Batavia, New York; author's collection.

Mr. C. P. Alexander reports having seen this species flying up in large numbers from the grass after sundown. Brachypterous and macropterous females of what is doubtless this species rather than the *ocellatus* from Texas, are well described by Prof. Osborn (Proc. Iowa Acad. Sci., V, p. 238, 1898); the nymphs and adults found occurring on grassy ridges.

Clivinema regalis new species.

Bright orange red with blackish hemelytra, antennae and tibiae; structurally quite similar to *villosa* but differing greatly in size and color, the pubescence without prominent recurved tips. Claws toothed

at the base, destitute of arolia, similar in structure to *villosa*. Pronotum with an apical gibbosely convex area, stricture apparent only at the sides from which an impressed line extends to the rear margin of the calli.

♂. Length 5.7 mm. *Head*: width across eyes 1.05 mm., width of vertex .54 mm., length .51 mm., height at base .60 mm.; pale pubescent, vertex convex, ecarinate; orange red, tylus and a transverse impression at the base black, sutures and eyes blackish, vertex usually with two longitudinal fuscous to blackish rays. Rostrum scarcely attaining the posterior margin of the sternum, blackish, the first two segments mostly reddish.

Antennae: segment I, length .43 mm., width .14 mm., blackish, sometimes with reddish; II, length 2.05 mm., width .14 mm., quite uniformly thickened, black, thickly clothed with short black hairs; III, length .60 mm., slender, width .06 mm., black, only a few hairs with very fine pubescence; IV, length .40 mm., similar to III.

Pronotum: length 1.42 mm., width at base 1.99 mm., apex .80 mm., height at apex .91 mm.; bright red or orange red when faded; disk shallowly punctate, more or less transversely rugose; calli apparent as impressed ovals, usually black, shining, joined at the side by an impressed line leading to the anterior angles, thus defining the arched apical portion or gibbosely convex hood; coxal cleft extending high as the lateral margin of the disk, separated from the above impressed line only by a thin lateral projection. Scutellum bright red, pubescent, strongly convex, arched, with a broad median longitudinal impression. Sternum red, side pieces covered with a white flocculent wax-like material, often present in greater degree along the full length of the body.

Hemelytra: greatest width 2 mm., black, shining, somewhat translucent, roughly wrinkled, covered with long erect pale pubescence. Membrane evenly clouded with fuscous, except a pale spot at the apex of the cuneus, veins dark fuscous.

Legs: bright red, shining, apices of the femora and a longitudinal bar or row of dots on the under side, blackish; tibiae and tarsi black.

Venter: red, pale pubescent; genital claspers blackish, dextral clasper small, sinistral clasper long and slender, quite similar to that in *Largidea rubida* and *davisi*.

♀. Length 5.6 mm., width 2.5 mm., more robust than the male; second antennal segment more slender, thickest at the apex; vertex with two longitudinal black rays; the femora more so and the posterior margins of the abdominal segments and surrounding the ovipositor, blackish; entire body above and below coated with the white flocculent wax like material.

Described from 3 ♂♂ and 3 ♀♀, July 21-28, 1914, El

Paso, Texas, collected by Dr. J. Chester Bradley, who remarks: "Females were plump and very sluggish; collected from a shrub on the open mesa, possibly an Ocatilla which was in leaf at that time, on the side of Mt. Franklin not far outside the city limits of El Paso."

Type: ♂, July 28, El Paso, Texas, J. Chester Bradley; Cornell University collection.

Largidea davisi new species.

Resembles *grossa* in size and color but differs widely in the form of the antennae and the length of the rostrum; dark fusco-rufus brown, head and body covered with heavy pale yellowish pubescence, more or less matted and depressed. Length 6 mm.

♀. *Head*: width across eyes 1.28 mm., width of vertex .77 mm., length .51 mm., height at base .80 mm.; impunctate, darker than color of the body, the vertex and sutures about the tylus, blackish; base of tylus clearly defined, a short narrow longitudinal pit at the base similar to that in *rubida;* a prominent fovea just above the base of each antenna, vertex ecarinate, head shorter and more compressed as compared with *rubida.* Rostrum extending only slightly beyond the posterior margin of the fore coxae, or to the middle of the sternum; the same in both sexes.

Antennae: segment I, length .31 mm., greatest thickness .14 mm., dark rufus-brown, the apex and base blackish; II, length 1.28 mm., being exactly the width of the head, or less than the length of the pronotum, greatest thickness .14 mm., fusiform, not flattened as in *grossa* or with depressions of any kind, thickly clothed with dark brown hairs, a few bristles intermixed, rich rufus-brown to wine color, darker toward the apex; III, length .37 mm., with dark fuscous; IV, .37 mm., same color as III.

Pronotum: length 1.59 mm., width at base 2.19 mm., apex 1.14 mm., dark fusco-rufus, the polished hook-shaped line about the calli, black; calli as in *rubida,* typical of the generic characters; disk behind the calli coarsely, deeply and closely punctate, more finely punctured before the calli; lateral margins sharply defined as in *rubida.* Scutellum roughly transversely rugose along a slightly sulcate median line. Sternum with longitudinal median impressed line, opaque beneath with a few scattered pubescent hairs, shining at the sides and with matted pubescence.

Hemelytra: greatest width, ♀, 2.5 mm., ♂, 2.1 mm.; clavus, corium, and cuneus uniformly colored dark reddish brown, inclined to wine color in the more translucent parts; membrane evenly shaded with fuscous, veins darker tinged with reddish; closely covered with fine

and shallow punctures; clothed with short oppressed yellowish pubescence.

Legs: dark fuscous brown, femora with a longitudinal row of dark spots beneath, not visible in certain lights; tarsi blackish, the basal segment flattened beneath and extending well under the second segment (fig. 2).

Venter: mostly dark grayish brown, blackish on the posterior margin of each segment; spiracles conspicuous, appearing as sunken black spots; rather long and prominent pale yellowish pubescence.

♂. Similar to the female only more slender: length 5.7 mm. The antennae and character of the first tarsal segment do not differ from those of the female, though the length of the second antennal segment (1.28 mm.) is slightly longer than the width of the head (1.14 mm.) across the eyes. The male genital forceps are quite similar to those of *rubida* thus not affording good specific characters but on the other hand showing generic relationship.

Described from a male and three females, Sept. 24, 25, Promised Land, Long Island, New York, collected by Mr. William T. Davis and Mr. G. P. Engelhardt. I have also seen a half dozen other specimens from the same locality.

Type: ♀, Sept. 24, Promised Land, Long Island, New York, Wm. T. Davis; author's collection.

The writer has studied Uhler's type specimen of (*Clivinema*) *rubida* in the National Museum collection and was unable to distinguish from it Colorado specimens which were later determined as *marginata* by Mr. Van Duzee. It is evident that the character of the antennae and the length of the rostrum cannot be taken as generic characters but only as specific, since these differ in each of three species. The form of the pronotum and particularly the character of the calli and basal segment of the tarsi appear to be distinctive of the genus *Largidea*.

Correction of the Specific Name of a Dragonfly (Odon.).

Metaleptobasis brysonima Williamson, Proc. U. S. Nat. Mus. Vol. 48, 1915, p. 602. On September 4, 1916, Dr. Calvert wrote me that in the Kew Index he found no generic plant name *Brysonima*, but a *Byrsonima*, and in Pittier's list of Costa Rican plants two species of *Byrsonima* are recorded. Under date of October 9, he writes me that he believes a correction of the specific name of the dragonfly is permissible under Article 19, Intern. Rules Zool. Nomenclature. This correction is hereby proposed and the name changed from *Metaleptobasis brysonima* to *Metaleptobasis byrsonima*.—E. B. WILLIAMSON.

Notes on the Penes of Damselflies (Odonata).

No. 2. The Close Relations inter se of the Hawaiian Agrionines.

By CLARENCE HAMILTON KENNEDY, Cornell University.

(Plates II and III.)

In my first paper* I discussed a genus (*Acanthagrion*) in which the various forms comprising it were so close in color and structure that many had been considered but varieties until a study of the penes showed each form to be a good species structurally, for the penes of the various species were remarkably different.

In this paper I wish to discuss a group, the Hawaiian Agrionines, in which just the opposite relation holds. In venation, color, size, and in the structure of the male claspers the Hawaiian Agrionines differ radically among themselves but the penes throughout are the same type.

This opportunity came recently while in Philadelphia when I had the privilege of examining the penes of nineteen species and varieties of Hawaiian Agrioninae. These were a series of specimens collected by Dr. R. C. L. Perkins, and given by him to Dr. P. P. Calvert. In all cases the determinations are those of Dr. Perkins and so probably agree with his published articles.† Lack of time prevented an examination of the specimens other than of the penes. As the number of specimens was small, in some cases there being only a single male or female, an attempt to study the specimens with a view to possible grouping would have been inadvisable as Dr. Perkins' own studies of this group show great ranges in variation in many of the species.

Ever since I first looked over the list of Hawaiian Odonata, I had been skeptical that twenty-four species of damselflies, the entire damselfly fauna of this isolated region, should be comprised in but two genera. Later, when I first glanced at the box of specimens on which this study is based, I felt certain that there were at least three genera and probably more.

* Ent. News, xxvii, 325-330, July, 1916.

† Fauna Hawaiiensis. Vol. I, p. clxxv.; Vol. II, pp. 63-77, and 693-696. R. C. L. Perkins.

The large red forms with the richly veined wings, appeared at first sight more than generically distinct from the various small dark species and my interest and surprise increased steadily as I examined species after species and found throughout almost identical penes. The study of the penes but confirms the opinions expressed by McLachlan* and Perkins that in spite of their diverse forms these Hawaiian species of Agrionines are so closely related *inter se* that it is questionable whether they should not remain as a single genus.

The figs. 1 to 38 show, better than I can describe, the uniformity in structure throughout this group. Probably it extends to those Hawaiian species in which the penis has not yet been examined.† This form of penis is peculiar among agrionine penes in that the third or apical segment is offset, or attached subapically to the second segment. The apical lobe has an apical, sagittal cleft, which in all but three species is at least half the length of the lobe in depth. All have the internal soft fold, but in all the terminal soft fold of segment two is lacking, unless it is homologous with that part of the apex of segment two which lies beyond the insertion of segment three. All degrees of spininess exist from no spines to a complete row along each side of the shaft.

The following classification is that of Perkins‡ and is based on the male appendages as the most constant character:—

Group 1. *xanthomelas, pacificum, nigrohamatum.*
Group 2. *oresitrophum, orobates, leptodemas, calliphya.*
Group 3. *koelense, asteliae, amaurodytum, eudytum, adytum.*
Group 4. *nesiotes.*
Group 5. *oahuense.*
Group 6. *deceptor, vagabundum, kauaiense, molokaiense, jugorum.*
Group 7. *oceanicum, blackburni, heterogamias.*

This does not include *calverti* or *williamsoni* the relationships of which species Perkins does not indicate.

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*Ann. and Mag. Nat. Hist. (5), Vol. 12, p. 240.

†While studying the collection in the Museum of Comparative Zoology, Cambridge, Mass., I was able to examine *molokaiense* and the *fallax* and *waianaeanum* varieties of *amaurodytum*. These all have the typical form of penis for this group.

‡Fauna Hawaiiensis, Vol. II, p. 694.

In this paper I have used *Megalagrion* for these Hawaiian forms. The genus *Megalagrion* was established by McLachlan* for *blackburni* and *oceanicum,* with *blackburni* the type of the genus. Perkins later described *heterogamias* and considered it a close relative of these. He also pointed out that certain individuals of species in Group 6, especially of *kauaicnse,* showed the venational characters of *Megalagrion,* thus preventing the use of this generic name to set off these three with the richly veined wings from the other Hawaiian forms. Perkins placed the entire group in the old genus *Agrion,* now *Coenagrion.* Studies of the penes in these forms show that the genus *Coenagrion* can probably be broken up and that these Hawaiian species are a compact group quite distinct from the other groups. As *Megalagrion* has been used for some of these Hawaiian species, it will then become applicable to the entire series of Hawaiian Agrionines as I have used it.

I had hoped that the penes more than the other characters might give some clue to the relationship and probable origin of this group. The penes do show that these Hawaiian Agrionines in spite of the great range in their appearance and structure are a compact group and undoubtedly have been derived from some single ancient immigrant that had strayed into the islands. It lines the Odonata up with what is already known about the birds (Drepanidae), the land snails (Achatinellidae) and those orders of insects in which there are large endemic genera with apparently diverse but really closely related species. These strange groups have probably in each case been derived from some single ancestor which has strayed into the islands in the remote past.

More difficult is the origin and probable relationship of this ancestral Agrionine. A study of the penes in the species listed by Kirby as *Coenagrion* shows that the extra-Hawaiian forms fall into at least two groups, the group of which *puella* is the type (see figs. 39, 46-49) and the group of which *lindenii* is the type (see figs. 40-45). As *lindenii* has been given generic rank by Navas† as *Cercion lindenii,* probably *Cercion* can be

*Ann. and Mag. Nat. Hist. (5), Vol. 12, p. 237.
†Broteria 6, p. 55, 1907.

applied to the other three species figured as having penes similar to that of *lindenii*. I have so used it, though I should have compared these species in other characters had I had time. A good series of intermediate forms exists in the genus *Coenagrion* between the *puella* penis and such penes as are shown in figs. 46-49.

Of the two groups represented by *lindenii* and *puella* respectively, the penes would seem to indicate relationship of the Hawaiian Megalagrions with *Cercion* rather than with *Coenagrion* of the *puella* group. This agrees with McLachlan's observation* that the Hawaiian forms seemed more like *lindenii* than any of the other Eurasian species. As the American Coenagrions have penes which are aberrant forms of the *puella* type, this agrees with what is thought concerning the origin of the other peculiar Hawaiian genera: that these are not North American in origin.

My first paper showed that too much dependence cannot be put on penile characters alone, nevertheless a study of these in this case has thrown an interesting side light on this Hawaiian problem.

EXPLANATION OF PLATES II AND III.

Drawings of the penes of *Megalagrion*, *Cercion* and *Coenagrion*, being ventral and lateral views of the last two segments.

Figs. 1-2. *Megalagrion pacificum* (McLachlan). Northwest Koolau Range, Oahu, Hawaiian Islands; 1500 ft. elevation. April, 1901. R. C. L. Perkins coll.

Figs. 3-4. *Megalagrion xanthomelas* (Selys). Honolulu, Oahu, Hawaiian Islands. Nov., 1900. R. C. L. Perkins coll.

Figs. 5-6. *Megalagrion leptodemas* (Perkins). Northwest Koolau Range, Oahu, Hawaiian Islands; 1800 ft. elevation. April, 1901. R. C. L. Perkins coll.

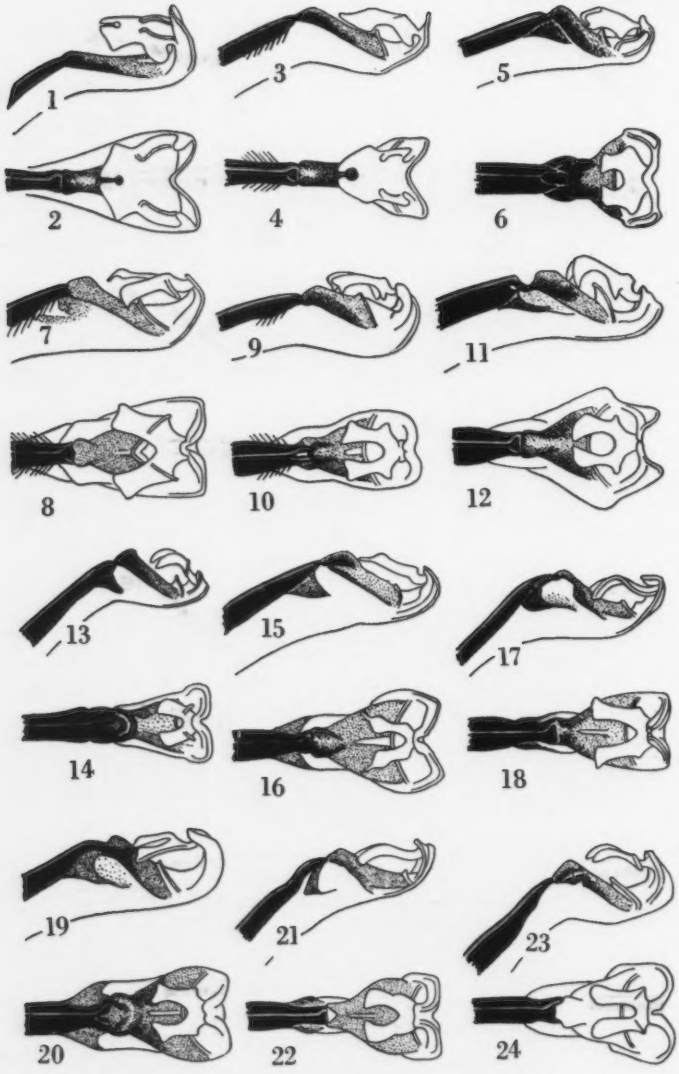
Figs. 7-8. *Megalagrion amaurodytum* var. *peles* (Perkins). Hawaii, Hawaiian Islands, 1901. Koebele coll.

Figs. 9-10. *Megalagrion calliphya* (McLachlan). Iao Valley, Maui, Hawaiian Islands. 1902. R. C. L. Perkins coll.

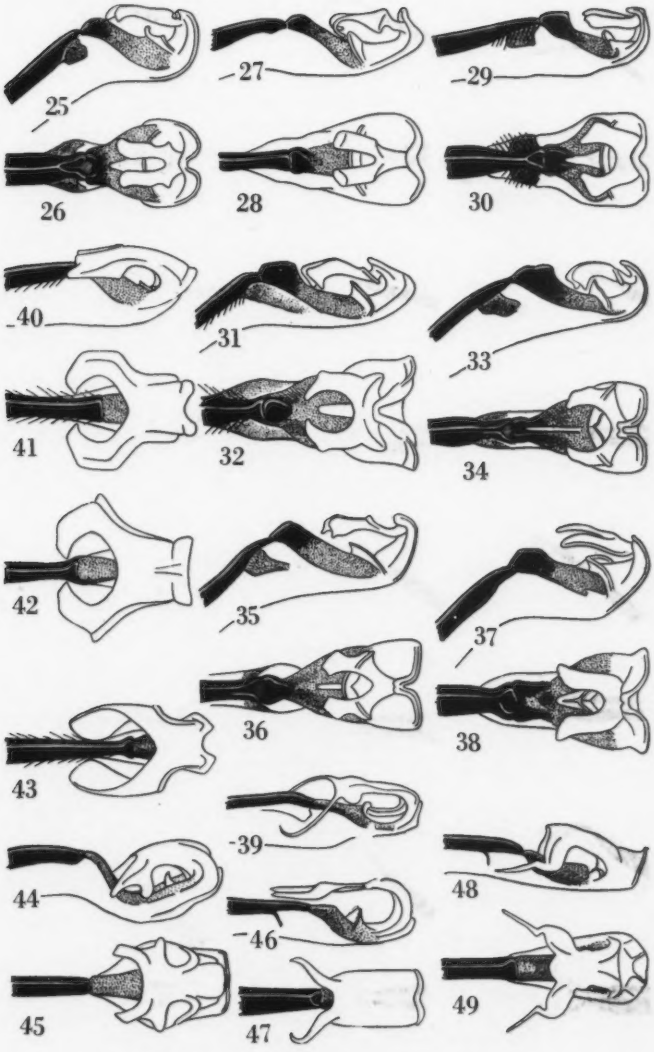
Figs. 11-12. *Megalagrion calliphya* var. *microdemas* Kilauea, Hawaii, Hawaiian Islands. July, 1903. R. C. L. Perkins coll.

Figs. 13-14. *Megalagrion eudytum* (Perkins). Lihue, Kauai, Hawaiian Islands; 1000 + ft. elevation. R. C. L. Perkins coll.

* Ann. and Mag. Nat. Hist. (5), Vol. 12, p. 240.



PENES OF HAWAIIAN AGRIONINAE.—KENNEDY.



PENES OF HAWAIIAN AGRIONINAE.—KENNEDY.

Figs. 15-16. *Megalagrion deceptor* (McLachlan). Oahu, Hawaiian Islands. Koebele coll.*

Figs. 17-18. *Megalagrion blackburni* McLachlan. Halealau, Hawaiian Islands. June, 1903. R. C. L. Perkins coll.

Figs. 19-20. *Megalagrion oceanicum* McLachlan. Northwest Koolau Range, Oahu, Hawaiian Islands; 1500 ft. elevation. April, 1901. R. C. L. Perkins coll.

Figs. 21-22. *Megalagrion heterogamias* (Perkins). Makaweli, Kauai, Hawaiian Islands; 2000 ft. elevation. Feb., 1897. R. C. L. Perkins coll.

Figs. 23-24. *Megalagrion vagabundum* (Perkins). Lihue, Kauai, Hawaiian Islands. R. C. L. Perkins coll.

Figs. 25-26. *Megalagrion oahuense* (Blackburn). Northwest Koolau Range, Oahu, Hawaiian Islands; 1500 ft. elevation. R. C. L. Perkins coll.

Figs. 27-28. *Megalagrion koelense* (Blackburn). Honolulu Mts., Hawaiian Islands; 1800 ft. elevation. Dec., 1901. R. C. L. Perkins coll.

Figs. 29-30. *Megalagrion asteliae* (Perkins). Honolulu Mts., Oahu, Hawaiian Islands, 2000 ft. elevation. July, 1900. R. C. L. Perkins coll.

Figs. 31-32. *Megalagrion nigrohamatum* (Blackburn). West Maui Mts., Maui, Hawaiian Islands. Oct., 1896. R. C. L. Perkins coll.

Figs. 33-34. *Megalagrion nigrohamatum* var. *nigrolineatum* (Perkins). Northwest Koolau Range, Oahu, Hawaiian Islands; 1500 ft. elevation. R. C. L. Perkins coll.

Figs. 35-36. *Megalagrion hawaiiense* (McLachlan). Palolo Valley, Oahu, Hawaiian Islands. May, 1912. R. C. L. Perkins coll.

Figs. 37-38. *Megalagrion nesiotes* (Perkins). Kilauea, Hawaii, Hawaiian Islands. July, 1903. R. C. L. Perkins coll.

Fig. 39. *Coenagrion puella* (Linn.). From male in coll. of E. B. Williamson. No data except July 27, 1907.

[* The specimen from which this drawing was made is not typical *deceptor*, but differs in having the inferior appendages almost as long as the superiors, more strongly curved dorsad in the apical half so that the upper margin of the inferiors is almost a (concave) semicircle. The dilated part of the superiors is not as much as half the length of the appendages and is a little higher, proportionally and relatively, than in other specimens. There are four, not five, antenodal cells and less black on the body generally than called for by McLachlan's description. These color and venational differences may be but individual variations, judging from other Hawaiian species, but whether the differences above mentioned for the appendages are explicable in the same way, I am unable to decide, having too few specimens.—P. P. CALVERT.]

Figs. 40-41. *Cercion lindenii* (Selys). From male in coll. of E. B. Williamson. "K. J. Morton coll., May 1, 1912."

Fig. 42. *Cercion quadrigerum* (Selys). From male in coll. of Dr. P. P. Calvert. Only datum is "Japan."

Fig. 43. *Cercion* sp. From male in coll. of Dr. P. P. Calvert. "Japan, Chic. Exhib. No. 1397."

Figs. 44-45. *Cercion* (?) sp. From male, with damaged abdominal appendages, in coll. of Dr. P. P. Calvert. "Madagascar. From René Martin."

Figs. 46-47. *Coenagrion angulatum* Walker. From a male in coll. of E. B. Williamson. Coll. and det. by Dr. E. M. Walker.

Figs. 48-49. *Coenagrion caerulescens* (Fonsc.). From male in coll. of E. B. Williamson. "From K. J. Morton. Sebdon, Algeria, June 23, 1904."

A Simple Method of Identifying the Anopheles Mosquitoes of the Canal Zone (Dip.).*

By L. H. Dunn, Entomologist, Board of Health Laboratory, Ancon, Panama Canal Zone.

The purpose of this article is to endeavor to supply a long-felt want and present a simple method of identifying the more common types of *Anopheles* mosquitoes found in the Canal Zone, and it is to be hoped that it may prove to be useful to those for whom it is intended, sanitary inspectors, medical men, and others interested in sanitary work.

The anti-malarial work on the Canal Zone is of sufficient importance to make it necessary that all those engaged in sanitary work should be able to identify the *Anopheles* commonly encountered, and especially should be able to differentiate those that are known to be malarial carriers from those that are not.

Each species of the Zone *Anopheles* has some characteristic markings peculiar to itself that make it easy to identify when they are once known, and provided the specimens are not too badly mutilated. Mosquitoes that have been in flight for some time before capture, or have been bred out from larvae and left in a breeding jar for several days before an attempt at

*Read before The Medical Association of the Isthmian Canal Zone, September 16, 1916.

identification is made, are often broken and rubbed sufficiently to remove many of the scales, and to lose some of the color markings that help to simplify identification, and are more difficult to identify.

As far as I have been able to ascertain eleven species of *Anopheles* have been found in the Canal Zone up to the present time. Seven of these species are commonly found in this region. The remaining four species are seldom encountered. The seven common kinds are placed in the following list according to their abundance on the Canal Zone at the present time: *Anopheles albimanus* Wiedemann, *tarsimaculata* Goeldi, *pseudopunctipennis* Theobald, *malefactor* Dyar & Knab, *argyritarsis* Desvoidy, *apicimacula* Dyar & Knab, *eiseni* Coquillett.

The four species not commonly found are: *Anopheles gorgasi* Dyar & Knab, *cruzii* Dyar & Knab, *punctimacula* Dyar & Knab, *franciscanus* McCracken.

Seasonal changes exert an influence on the abundance of the different species and the relative numbers of the *Anopheles* at certain periods of the year may not conform with this list, but it has been taken from the average for the whole year, from both the larvae received at the Laboratory for identification, and from the hand catches of adults in quarters that are sent in daily, from all towns and army posts in the Zone, to be identified. For example, *A. eiseni* that nearly always breeds in tree-holes and hollows in rocks and other places of like nature, is few in numbers even during the middle of the rainy season, but may not be found even in what seem to be its favorite localities even after a long search during the latter part of a dry season when very little rain has fallen and its habitual breeding places are dried up.

I have attempted to construct the following table in such a manner that it provides a simple method for determining the adult *Anopheles* found in the Canal Zone, and as far as possible have avoided all entomological nomenclature so that it may be readily understood by those who are not familiar with the anatomy of mosquitoes.

Table for the identification of the common species of Canal Zone Anopheles.

1—Hind legs with white feet..... 2
Hind legs long and dark colored without white feet or white markings .....*A. pseudopunctipennis*
Hind legs without white feet, but with white band at middle of leg (white knee).....*A. eiseni*
Hind legs without white feet but with all three pairs of legs covered with white spots and narrow white bands (having a freckled appearance) 3
2—White feet with a narrow black band near the end..... 4
White feet without a narrow black band near the end, *A. argyritarsis*
3—With black spot, or patch of black scales, at extreme, or apical, end of wing .....*A. apicimacula*
Without a black spot, or patch of black scales, at extreme, or apical, end of wing .....*A. malefactor*
4—Female with tip, or apical end, of palpi white, separated from a narrow white band by a wide black band. The separating black band is more than twice as wide as either the white tip or the proximal white band .....*A. albimanus*
Female with tip, or apical end, of palpi white, separated from a wide white band by a narrow black band. The separating black band is less than half as wide as either the white tip or the proximal white band .....*A. tarsimaculata*

But one specimen of *A. gorgasi* has been found on the Isthmus so far, and during the five years that I have been at the Laboratory I have not received any specimens of either *A. punctimacula* or *A. cruzii* in either the larval or adult forms. *A. franciscanus* is so few in numbers that it is practically nil, therefore owing to the fact that these four species are so seldom encountered I have not included them in the foregoing table, as doing so would only make the table more difficult for a beginner to understand, and in this case not increase its value for practical work.

Anopheles pseudopunctipennis.

A few words of explanation may serve to assist in verifying the identifications of the different species as made by this table. Beginning with *A. pseudopunctipennis,* which is about the easiest to identify, it can be seen that it is the largest of the seven species of *Anopheles,* and has very long legs. All

the legs are used to support the body while at rest, with all feet on the resting surface. This species is easily identified by the long hind legs devoid of any white spots or bands, and without white feet. Each joint has a small yellow spot at its union with the following joint, and these spots should not be mistaken for white bands. Another identifying mark of this species is a light gray stripe on the back, or thorax, extending from the head to the abdomen. This begins as a very narrow stripe between the eyes and widens as it extends backwards until the posterior end becomes nearly as wide as the thorax. The palpi are dark brown with two narrow bands and tip of light yellow. The light-colored tip is separated from the proximal light band by a dark band about as wide as the light tip. The palpi somewhat resemble those of *A. albimanus* in the arrangement of the bands, but there is a difference in their width and *A. pseudopunctipennis* has light yellow bands while *A. albimanus* has white. The principal features of *A. pseudopunctipennis* are that there are no white markings on the legs, and none of the feet are white.

Anopheles eiseni.

The next species to be easily identified is *A. eiseni.* It is smaller than *A. pseudopunctipennis* and can be differentiated from that species by having a white band near the middle of each hind leg. The feet and middle pair of legs are dark with no white markings. The single broad white band on each hind leg and dark feet makes this mosquito easily separated from all the other species having white feet or spotted legs. The wing borders of this species are dark-colored except for two white spots at the tip, or apex, of the wing. The palpi are dark except for the apical third, which consists of two white bands, or rather one white band and a white tip, separated from each other by a narrow black band one half as wide as either of the white ones.

Anopheles malefactor et apicimacula.

The next group in order of simplicity of identification is composed of those whose legs are covered with narrow white bands and small white spots and have the appearance of being

covered with white freckles. This speckled-legged group consists of two species, *A. malefactor* and *A apicimacula,* and can be easily separated from the other five species of common *Anopheles* of the Canal Zone by their speckled legs. Both of these mosquitoes are quite pretty and are almost identical in appearance and can only be separated from one another by the wing markings. *A. apicimacula* has a large black spot, or patch of black scales, at the upper portion of the tip, or apex, of the wings, and this deep black spot easily separates this species from *A. malefactor,* which does not have this deep black spot but has a few small scattered groups of black spots taking its place. There is also a difference in the arrangement of the black and white spots along the veins of the wings, but to anyone not accustomed to identifying mosquitoes this diversity may not be readily noticeable, and the difference between the decoration on the tip of the wing is the best means of separating the two species: the large black spot in *A. apicimacula* and the few small scattered groups of black spots in *A. malefactor.* It is rather difficult to distinguish between these two species when the specimens are very badly rubbed and many of the wing scales removed.

Anopheles argyritarsis, albimanus et tarsimaculata.

The next and last and most important group from a medical standpoint is the white-footed group which consists of three species, *A. argyritarsis, A. albimanus,* and *A. tarsimaculata.* These three mosquitoes are readily separated from the other four common *Anopheles* by the fact that each of these three species has white feet on the hind legs. *A. argyritarsis* can be readily distinguished from the other two species by its hind feet which are snow white without any narrow black band near the end. The palpi of *A. argyritarsis* and *A. albimanus* are very similar. *A. albimanus* and *A. tarsimaculata* both have white hind feet, but in both species there is a narrow black band near the end. This black band is separated from the apical end of the feet by a narrow white band of nearly the same width as the black band. The similarity of the feet markings in these two mosquitoes makes it necessary

to separate the two species by the markings on the palpi. As shown in the foregoing table the difference between the markings of the palpi is in the arrangement of the black and white bands. The white markings of *A. albimanus* can be plainly seen with a small lens and they consist of a white tip, or apex, and two narrow white bands. The white tip is separated from the nearer white band by a wide black band more than twice as wide as either the white band or tip. This nearer white band is separated from the second white band by another black band about as wide as the first black band. In *A. tarsimaculata* the palpi have a wide white tip and one wide white band and another narrower one. The wide white tip is separated from the nearer wide white band by a narrow black band less than half as wide as either the wide white band or tip. This nearer wide white band is separated from the second white band, which is a narrow one, by a wide black band much wider than the wide white band.

These two species seem to be very closely related to each other and the only practical difference between them is in the arrangement of the bands on the proboscis. Some specimens when caught as adults may have the proboscis so badly rubbed that they may be almost entirely denuded of scales. These are very difficult to identify as it is the scales of different colors that give the color markings on the proboscis, but the difference in fresh specimens can be so readily seen that a glance at the proboscis is all that is required to separate the two species.

All of the markings that I have described are so distinctive and well-defined on fresh unrubbed females that they are obvious to an untrained observer, and after they have been seen a few times are easily remembered. The best plan for a beginner is to acquire experience by identifying bred out specimens before starting on those that have been caught in flight.

This method of identification only pertains to the seven common species and does not provide for the classification of the uncommon species or for any new species that may make their appearance in the Canal Zone. These encounters are liable to occur but seldom if at all. After a little experience one becomes so familiar with the markings of the common types that any new varieties can easily be detected.

New Chalcid Flies from Maryland (Hym.).

By A. A. GIRAULT, Glenndale, Maryland.

CARLYLEIA new genus.

Female:—Like *Parasecodella* Girault but the marginal vein is somewhat longer than the submarginal, the postmarginal and stigmal veins are nearly equal, distinct, moderately long, the former a little longer, the stigmal with a distinct neck and ovate club; the antennae are inserted a little below the eyes, near the mouth-border and the club is solid and scarcely wider than the funicle; the distinct propodeum is noncarinate (of uniform length or nearly so, its minute spiracle about central, or a little caudad of middle); the abdomen bears a very short petiole, is pointed conic-ovate, produced beneath, longer than the thorax, excluding the ovipositor which is extruded for a third of the abdomen's length.

Otherwise the same but the mandibles bidentate. Parapsidal furrows complete, distinct. Axillae scarcely advanced. Caudal tibial spur single. Marginal cilia of fore wing a little longer than normal (that is, not extremely short). Body slender. Coxae large. Prothorax conical.

This group is somewhat anomalous but because of its habitus, noncarinated propodeum, venation and the ciliation of the fore wing and the paucity of teeth in the mandibles, I think it is correctly placed among the Omphalini. The submarginal vein is distinctly broken.

Carlyleia marilandica new species. Genotype.

♀. Length, 1.00 mm., excluding the ovipositor. Metallic blue green, the fore wings lightly infuscated throughout except for a more or less obscure, clear space across from the break of the submarginal vein; legs white except all of cephalic coxa and femur and the middle and caudal femora (except at each end). Antennae black, the scape yellowish white except above at apex. First ring joint smallest; funicle 1 somewhat longer than wide, slightly shorter than the pedicel, 4 quadrate; club without a terminal nipple, about three-fourths the length of the funicle. Head subglabrous. Thorax very densely scaly, the scutellum smoother. Scutum with scattered, prostrate setae, the scutellum with not more than four.

Described from one female captured in the woods, May, 1916 (Glenndale, Maryland).

Type:—Catalogue *No.* 20296, United States National Museum, the female on a tag, the head and a caudal leg on a slide.

Aprostocetus marilandicus new species.

♀. The same as *whitmani* but a third smaller, the antennae are wholly white except the bulla and proximal third each of the scape and pedicel, the third club joint dusky at apex; otherwise the same. Types compared.

Described from two females from the woods, Glenndale, Prince George County, Maryland, April.

Types: Catalogue *No.* 20300, U. S. N. M., the two females together on a tag, their heads on a slide.

This new species is like *Neomphaloidella semilongifasciata* and *N. pulchriventris* of North America, purple species with a more or less yellow abdomen, margined with purple, the legs with the dark color more abundant from caudad to cephalad, thus similar to a number of Australian species of Tetrastichini and Eupelminae.

Chrysocharomyia eleganta new species.

♀. Length, 1.30 mm. Abdomen conic-ovate, somewhat longer than the thorax.

Dark metallic blue, the legs and antennae concolorous except knees, tips of tibiae, cephalic tibiae except for two obscure cincti, one near knee, the other at the middle, three proximal tarsal joints and the scape except above at apex. Venter of abdomen suffused with yellowish.

Mandibles acutely tridentate but the ventral side of the third tooth denticulate. Ring joints subequal. Pedicel a third longer than wide at apex, shorter than any following joint by far; funicle 1 longest of the flagellum, two and one-quarter times longer than wide, slightly longer than club 2; funicles 2 to 3 subequal, each nearly twice longer than wide or 3 subequal to club 1 and a little shorter than 2; terminal spine of club distinct, not half the length of its joint.

Fore wings with a nearly complete smoky fascia across from the stigmal knob and which fades caudad of middle, and with a small round smoky spot against the marginal vein a short distance proximad of its middle. Marginal vein elongate, the postmarginal distinctly longer than the stigmal, the latter with a short neck and an ovate club. Marginal fringes of the fore wing distinct, short.

Body densely scaly, the scutellum with a seta on each side before apex, the propodeum only with a delicate carina laterad of the spiracle. Parapsidal furrows complete but sutured cephalad only.

One female, Glenndale, Maryland, from the woods, June 24, 1916.

—*Type*: Catalogue *No.* 20356, U. S. N. M., the female on a tag, a wing, caudal tibia and the head on a slide.

Achrysocharis divina new species.

Female:—Length, 0.75 mm. Differs from the genotype in having the scape moderately convexly dilated ventrad, plainly compressed.

Metallic green and densely scaly punctate; legs and antennae white except the coxae, middle femur at base, middle tibia just below the knee, caudal femora and tibiae, pedicel except at apex beneath, funicle 1, apex of funicle 2, clubs 2 and 3, and the blotched scape which is metallic at proximal third of ventral margin and at distal third (or the apex broadly). Head pale yellow excepting the occiput (except narrowly across at vertex), a broken metallic line across face just above the antennae and a second convexed and broken line through the antennae; also a more or less distinct spot near the eye on upper face, minute setae (few) of vertex from dusky dots.

Fore wings distinctly bifasciate, the first fascia from the apex of the marginal vein along the mesal side of the stigmal, flat-bow-shaped and fading toward the caudal margin, the second nearly straight but with wavy margins, across near apex (at middle, about its own width from apex). Marginal fringes of fore wing between a fifth and a sixth of the greatest wing width, the stigmal vein slightly longer than the postmarginal.

Cheeks moderately long, the mandibles 4-dentate. Flagellum clothed with scraggy hairs; funicle 1 a little longer than the oval pedicel, subequal to 2, the club joints a little more slender, the terminal nipple distinct, not as long as the joint bearing it. Parapsidal furrows distinct, complete.

One female, June 14, 1916, from a field of weeds, Prince George County, Maryland.

Type: Catalogue *No.* 20320, U. S. N. M., the female on a slide.

SPALANGIOLAELAPS new genus.

Nearly related to *Apterolaelaps* Girault but differs as follows: There is no arcuate carina on the face ventrad of the antennae, the carina separating the scrobes is at ventral third

only, the mandibles are 4-dentate, there is no cross-suture on the scutellum, the neck of the propodeum is more distinct while the abodmen is subsessile, the petiole transverse-linear. Moreover, the antennae are 13-jointed with one ring-joint, the club 3-jointed. Maxillary palpi 4-jointed. Pronotum quadrate.

Spalangiolaelaps argenticoxa new species. Genotype.

♀. Length, 2.50 mm. Honey yellow, the coxae silvery-white, the caudal tibiae fuscous, the apex of the abdomen, a spot between the tegula and the axilla, a large area dorso-laterad just before middle of segment 2 of the abdomen (fuscous), caudal margin of that segment broadly, pedicel and rest of flagellum, save funicles 1 to 2, black.

Head densely scaly-punctate, the lower face convergently striate. Pedicel nearly thrice longer than wide, distinctly shorter than funicle 1, the latter subelongate, thicker distad or subclavate, four times longer than wide, a third longer than 2, 6 quadrate, 7 subquadrate.

Thorax cross-reticulated scaly, the scutellum and axillae finely long-striate. Four long black bristles across pronotum caudad, two on caudal scutum, one on the axilla laterad, four on the scutellum at the middle, arranged in a semi-circle; long black setae on the vertex (8). Propodeum between the spiracles long-striate, the spiracle round, central. Parapsidal furrows as in *Uriolaelaps* yet touching the scutellum.

Fore wings about twice the size of the posterior wings, both small, longer than wide.

Abdomen delicately scaly, distad of segment 2.

From one female, Hillmead (Glenndale), Prince George County, Maryland. Captured by sweeping the foliage of oaks and other trees of various species in the woods, June 4, 1916.

Type: Catalogue *No.* 20305, U. S. N. M., the female on a tag, the head and a caudal tibia on a slide.

Miscogaster ungutta new species.

♀. Similar to *flora* but somewhat smaller and the middle tibiae also are metallic purple. Also, the short abdominal petiole is white. Otherwise the same. Mandibles 4-dentate.

One female, Glenndale, Maryland, from the woods, June 4, 1916.

Type: Catalogue *No.* 20313, U. S. N. M., the female on a tag, the head and caudal tibiae on a slide.

Some Unusual Orchid Insects (Hem., Lep., Dip., Col.).

By HARRY B. WEISS, New Brunswick, New Jersey.

(Plates IV and V.)

The following notes relate only to unusual insects which have been found associated with orchids growing in New Jersey greenhouses. Biological information concerning such species accumulates slowly, especially when one is forced to study them in greenhouses, where material as a rule is exceedingly scarce and the plants too valuable for unlimited experimentation.

Two of the species mentioned herein are new, having only recently been described by Mr. G. C. Champion, in the *Entomologist's Monthly Magazine* for September, 1916, page 200. These are the weevils *Cholus cattleyae* and *Diorymellus laevimargo*. Inasmuch as the above mentioned publication is readily accessible to entomologists in America, it was not thought necessary to reprint the descriptions which Mr. Champion so kindly drew up at my request.

Tenthecoris bicolor Scott (Hemip.).

This blue and red member of the family *Miridae* is occasionally met with in New Jersey greenhouses where orchids are grown and has been taken at various times by inspectors examining orchids from South America. It is a common occurrence to find the leaves of *Cattleya* orchids imported from Brazil covered with irregular, white spots one or two millimetres in size, due to the abstraction of chlorophyll by this bug. (Plate IV, fig. 3). As a rule it is never abundant enough in greenhouses to do much damage, although it has been known in the past to occur in numbers sufficient to seriously weaken and disfigure the orchids. It is incorrectly known to many orchid growers as the "Brazilian thrips."

The adult lives underneath the leaves of infested plants and both the nymphs and adults puncture the leaves and suck the juices. Cattleyas are especially subject to attack and Laelias and Sophronitis often show the characteristic spotting of the leaves. The following brief description from an account in

the *Gardeners' Chronicle* for May 16, 1908, p. 313, by Mr. F. Denis, will enable one to identify this species.

Tenthecoris bicolor Scott 1886, synonym *Euritotarsus orchidearum* Reuter 1902.

Head, pronotum and external edge of upper wings of a pronounced brick red color; thorax and rest of upper wings, bright blue; antennae and legs, yellow; upper side of body and antennae covered with fine short hairs; head conical in front with well developed eyes; antennae more than half as long as the body. Pronotum constricted, with a deep ridge in the centre of the constriction. The under part of the body is of a reddish-yellow. The length excluding antennae, 4 mm., the breadth rather less than 2 mm.

Castnia therapon Koll. (Lep.).

This is a rare insect in orchid houses occurring only in a very limited way. The large, pinkish white larva of this species bores through the rhizome and up into the bulb, doing, of course, considerable damage. *Oncidium crispum, Cattleya labiata* and *Catasetum* spp. are the recorded food plants. Brief mention is made of this species together with a figure of the adult in Seitz's *Macrolepidoptera of the World*, vol. VI, p. 12, plate 7, a, which gives Brazil as its native home. It is undoubtedly imported every year or so in orchids from Brazil and never becomes permanently established in the orchid house, as the adult is too large and showy to escape attention.

Parallelodiplosis cattleyae Moll. (Dip.).

This species known as the Cattleya midge is another rather rare insect. The larval stages are passed as yellowish-white maggots near the tips of the roots resulting in unsightly swellings, which disfigure the roots and check growth, sometimes causing them to turn black and die. According to Dr. E. P. Felt, who gives a brief account of this species in the *N. Y. State Museum Bulletin* 180, p. 89, each gall may contain from one to seven maggots, each in a cavity by itself. Orchids imported from Guatemala often have the roots badly disfigured by these swellings. (Plate IV, fig. 1).

Eucactophagus graphipterus Champ. (Col.). (Plate V, fig. 1.)

This interesting and large member of the family *Calandridae* is a native of Costa Rica and the U. S. of Colombia. It

feeds chiefly on such plants as *Oncidium oblongatum, Lycaste, Odontoglossum* and various other species having large soft pseudo-bulbs. The adult, which is about 17 mm. long and 7 mm. wide and characteristically marked, gnaws large irregular depressions in the pseudo-bulbs and also feeds on the bases of the leaves, usually cutting them off more or less completely. (Plate IV, fig. 4.) Sometimes they feed rather openly on the leaves, but as a rule they can be found lurking at the base of the plant. The larva lives in the pseudo-bulb and excavates quite a large cavity, destroying much of the interior and paving the way for decay. Pupation also takes place in the pseudo-bulb. The body of the adult is quite hard, it being almost impossible to pierce it with an ordinary pin unless considerable force is exerted. That they can endure long fasts is evident from the treatment, which they sometimes receive at the hands of unfeeling workmen in orchid houses, who tie strings to their legs and hang them up for weeks at a time finally taking them down and killing them in disgust because they persist in remaining alive.

Acypotheus (Baridius) orchivora Blackb. (Col.). (Plate V, fig. 3.)

It is not unusual to come across this representative of the family *Baridae* and indications of its work in *Dendrobium* orchids growing in various greenhouses in northern New Jersey. It is a typical, little, dull black weevil about 3.5 mm. long, having the snout and legs thickened, the thorax wider than long and rounded on the sides to the hind margin. The elytron is convex and broadly rounded to the apex. The head is finely punctured, the thoracic dorsum more coarsely pitted and the elytra marked with parallel punctured striae, the ventral surface and legs also being finely pitted. It was described by the Rev. T. Blackburn in the *Transactions of the Royal Society of South Australia,* 1900. Mr. Walter W. Froggatt in Misc. Pub. No. 751 from the *Agricultural Gazette of N. S. Wales* gives a brief account of this species and figures an adult. He states that the insects were bred from the pseudo-bulbs or thickened leaf stalks of *Dendrobium canaliculatum* and gives the following descriptions of the larva and pupa.

Larva—short, thickened, wrinkled and curled in burrow when at rest; head chestnut brown, lightest in center where it is bisected by two darker lines, arcuate on hind margin; jaws black, antennae and palpi reddish brown.

Pupa—Pale yellow with black eyes; tip of snout and spines on abdomen reddish brown, wing-pads dark colored at tips; dorsal surface of head smooth, bearing a few scattered hairs; thorax broad showing a depression on either side and a central suture; abdomen tapering to extremity, each segment furnished with a spine on either side with anal one bearing two and a number of spiny hairs at apex; surface shows several fine hairs upon head with two longer ones above eyes; snout and legs curled downward, wings folded down forming a pad on either side.

This insect was evidently introduced into New Jersey greenhouses in orchids imported from some tropical country of the Eastern hemisphere and while it is not by any means common, it is not unusual to collect a specimen or two by diligently hunting through a house of Dendrobiums. During the middle of the day the beetles seem to prefer to rest in the curled, basal portion of the leaf, where a considerable part of their feeding takes place. In New Jersey, *Dendrobium findlayanum* and *D. crystallinum* seem to be attacked more than other species as I have found entire specimens of these plants completely riddled by the larvae.

Diorymellus laevimargo Champ. (Col.). (Plate V, fig. 4.)

This little, black, shiny fellow, which is only 2 mm. long and 1 mm. wide and also a member of the *Baridae,* is sometimes excessively abundant in orchid houses feeding on Cattleyas and Dendrobiums. *Cattleya mossiae* and *C. speciosissima* have been the ones particularly subject to attack. In addition to feeding on the leaves, pseudo-bulbs and flower stalks, the orchid-growers credit this beetle with doing considerable damage to the flowers and unopened flower buds. Plate IV, figure 2 shows the somewhat hard discolorations and spots, usually at the tips and edges of the petals and sepals, which surround the feeding punctures. I have been informed that a somewhat similar-looking injury follows improper ventilation and watering. Such markings of course make the flowers unsalable or reduce their value. The beetles can be found, some-

times crawling slowly over the plants, but usually in the curled up, basal part of the leaf or in the sheath surrounding the flower stalk. Advantage is taken of this habit by the orchid-grower who sometimes sends a man daily through the house to hunt out and destroy them. Up to the present I have been unsuccessful in my search for larvae and pupae and know nothing concerning the early stages. Mr. G. C. Champion writes that the eight known species of *Diorymellus* are all from Central America and that this new species is related to *D. octostriatus* and *D. 12-striatus.*

Cholus cattleyae Champ. (Col.). (Plate V, fig. 2.)

This attractive species, which belongs to the *Curculionidae,* is about 11 mm. long, 5 mm. wide, black and characteristically marked with white and has been found as a rule associated only with *Cattleya gigas,* but other species are sometimes injured. Its feeding habits are somewhat similar to those of *Eucactophagus graphipterus* except that the damage is done higher up. The surface of the pseudo-bulb is irregularly chewed and the leaves punctured with large holes, the tissue surrounding these punctures finally turning black and becoming hard and dead. From information received from orchid-growers and my own observations, I am inclined to believe that the larval and pupal stages are passed within the pseudo-bulbs, as coleopterous larvae have been taken from these bulbs and they often contain large cavities and exit holes. Mr. Champion states that this species is allied to *C. forbesi* Pasc., from Ecuador, found among orchids and that two allied forms occur in Central America, these being *C. nigromaculatus* and *C. nigronotatus. Cattleya gigas* comes from Colombia which is undoubtedly the home of this species.*

Diaxenes dendrobii Gahan (Col.).

This species, known as the Dendrobium orchid beetle, at-

*Since the above was written, Mr. H. S. Barber has examined my specimens and finds that two species are confused. One is *Cholus cattleyae* and the other has been identified tentatively by him as *Cholus forbesii* Pascoe. In view of this, the notes under *Cholus cattleyae* apply equally well to ? *Cholus forbesii* as both were found together.

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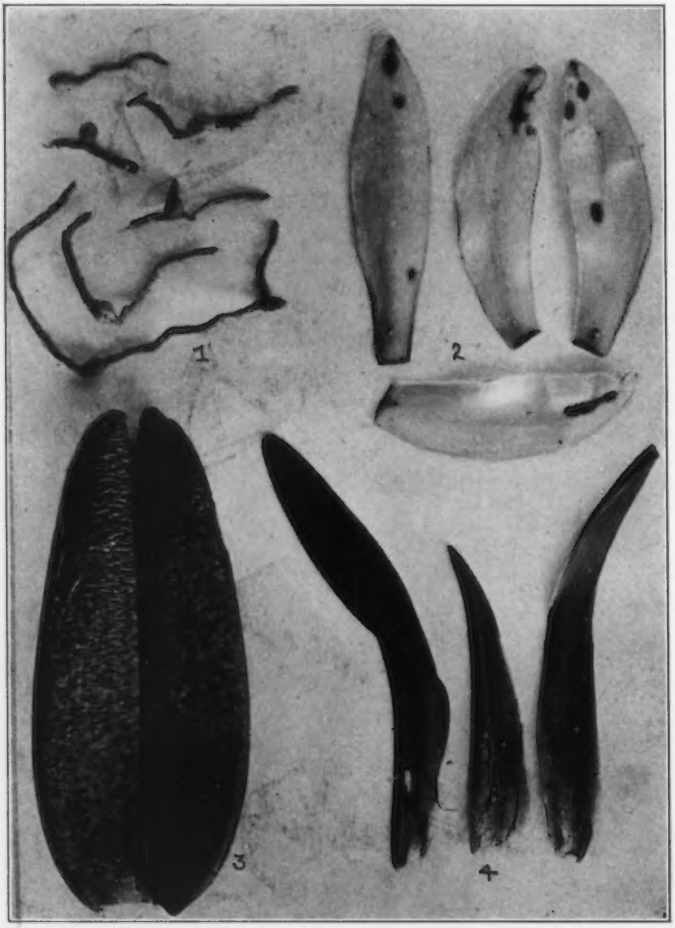
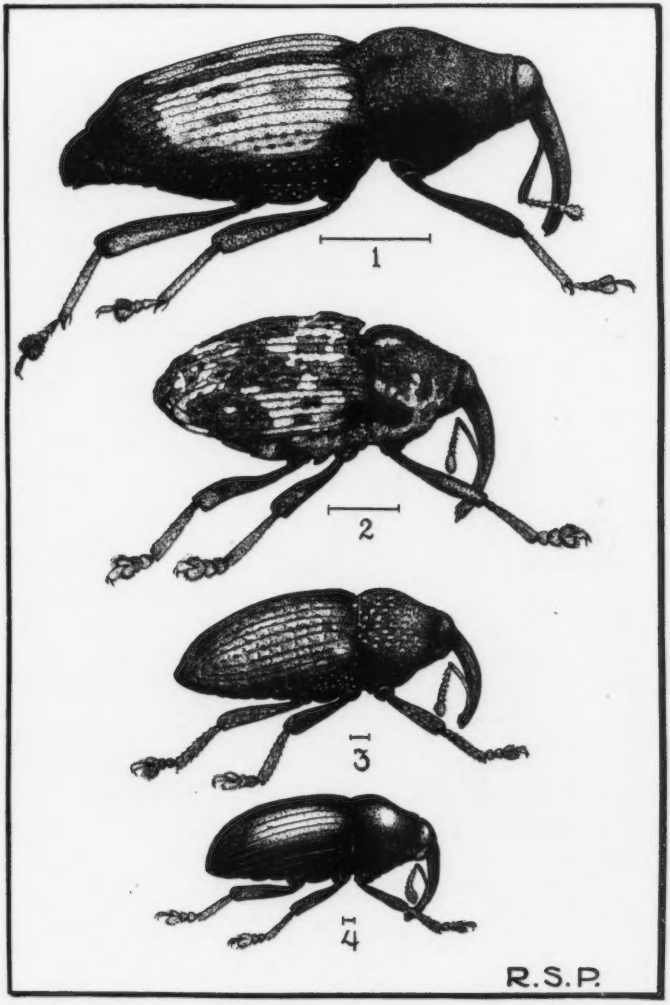


UNUSUAL ORCHID INSECTS.—WEISS.



UNUSUAL ORCHID INSECTS.—WEISS.

tacks Dendrobiums, Cattleyas and Laelias. The larvae feed in the tissue of the pseudo-bulb and sometimes mine it so completely that only the outer skin is left, while the beetles attack the foliage, pseudo-bulbs and roots. All stages, together with injured orchids, are figured in the *Gardeners' Chronicle* for July 24, 1897, by R. Stewart MacDougall. In the same article, an allied species, *Diaxenes taylori*, is also mentioned. As far as I know neither of these species has been found in New Jersey.

EXPLANATION OF PLATES.

PLATE IV.

Fig. 1—Galls of *Paralcllodiplosis cattleyae* on orchid roots.
Fig. 2—Sepals of *Cattleya mossiae* injured by *Diorymellus laevimargo* Champ.
Fig. 3—Leaf of *Cattleya* sp. showing discoloration due to feeding of *Tenthecoris bicolor.*
Fig. 4—Leaves of *Oncidium oblongatum* eaten at bases by *Eucactophagus graphipterus.*

PLATE V.

Fig. 1—*Eucactophagus graphipterus* Champ.
Fig. 2—*Cholus cattleyae* Champ.
Fig. 3—*Acypotheus orchivora* Blackb.
Fig. 4—*Diorymellus laevimargo* Champ.

The Distribution and Synonymy of Autographa vaccinii Hy. Edw. (Lep.).

By RODRIGUES OTTOLENGUI, New York City.

By way of a foreword I desire to state that after a lapse of fourteen years I am once more engaged in a study of *Autographa* and Allied Genera (see Journal New York Entomological Society, June, 1902). I hope in the near future to publish another monograph, this time illustrated with colored plates. To this end I already have colored drawings of all North American types in the British Museum, obtained through the courteous co-operation of Sir George Hampson. Also, about thirty colored drawings from my own material have thus far been completed by that wonderfully accurate

artist, Mrs. Wm. Beutenmuller, who is at work on the other North American species.

I would much appreciate the assistance and co-operation of American collectors and museum curators, not only in supplying specimens (for which I will gladly pay liberally in cash or exchange), but for information as well. The first information requested is in regard to *vaccinii*. If any collector or museum is in possession of this species, taken elsewhere than above timber line on Mt. Washington or neighboring peaks, I would give much for the privilege of examining the same.

In using the term *Autographa* as the generic name I am not at present denying Sir George Hampson's substituted term *Syngrapha*. I am simply using the term at present familiar to American collectors.

Autographa vaccinii was described by Harry Edwards (Entomologica Americana, Vol. II, p. 170, 1886). It was discovered by Mr. Roland Thaxter on Mt. Washington, and he also found and reared the larva on a species of *Vaccinium*, whence the name. In his description Edwards points out the similarities and difference between his new species and *u-aureum*. What did he mean by *u-aureum?*

I first collected on Mount Washington in 1890. I also during that same summer collected at Jefferson, New Hampshire, which is in the valley. I collected on Mount Washington and about Twin Mountain for several successive summers thereafter. My material was identified and named at that time mainly by comparisons made for me by Mr. Edwards and Mr. Neumoegen.

At that time the Grote Check List was in common use, in which *vaccinii* does not occur, but *u-aureum* Boisd. does occur, the order being *u-aureum, mortuorum, octoscripta,* which was exactly as I placed them in 1902, with only slight rearrangement, viz., *rectangula* (syn. *mortuorum*) *alias, octoscripta. Alias* here replaces *u-aureum* because I decided that it does not fit the description of *u-aureum,* the name, however, which it was carrying in all Atlantic Coast collections. Hence my

denominating it *"alias,"* it having passed under an assumed name as it were.

There is little doubt that *"alias"* is what Edwards had in mind when comparing his new species with *u-aureum.*

Prof. J. B. Smith tells us (Bulletin 44, U. S. Nat. Mus., p. 255) that the type of *vaccinii* is with Mr. Thaxter. This I believe is true, that type being at present at Cambridge, if I am not mistaken. But there is also a type in the Edwards collection, labeled correctly Mt. Washington.

Sir George Hampson lists this (Cat. Lep., vol. XIII, pp. 424-5) as *Syngrapha u-aureum,* giving *vaccinii* as a synonym.

I do not wish to discuss the validity of this synonymy at the present time further than to state that *u-aureum* was described from Dalecarlia, a Swedish locality.

Hampson gives the distribution as follows: Canada—Nova Scotia. U. S. A.—New Hampshire, Mount Washington; New York, Adirondack Mts. Alpine, Grote.

Prof. Smith in his Bulletin says: Mt. Washington, Adirondack Mts., Nova Scotia.

Dyar in his catalog says: North Atlantic States.

It is my own opinion that *vaccinii* has never been taken elsewhere than above timber line on Mt. Washington or some other contiguous range. Personally I have collected on Mt. Washington and in the adjacent valleys at least during four seasons. I have always been able to take *vaccinii* at proper season above timber line. I have captured other Autographas on the summit, but never a *vaccinii* below it. Mrs. Annie T. Slosson, who, perhaps, has collected in this region more thoroughly and more constantly than any other collector, tells me that her experience has been similar.

Whence then the statements that *vaccinii* has occurred in Nova Scotia and in the Adirondacks? I have spent fifteen summers in the Adirondacks and never saw a *vaccinii* there.

I believe that we have here a case of false identification. For example, only recently I examined the specimens in the American Museum Collection in New York, mainly the Edwards collection. Under *vaccinii* I found four specimens, the

labels reading Mt. Washington, Adirondack Mts. and one other locality, which I do not recall. The point is that the Mt. Washington specimens were *vaccinii,* one labeled "type." The Adirondack specimen was my *alias,* formerly labeled *u-aureum* in American collections. The other specimen was *octoscripta,* the four specimens representing three species.

I may add that I have found exactly similar confusion of these species wherever I have looked over collections, with rare exceptions.

That is why I ask collectors to report to me if anyone has *vaccinii* from any locality other than the Presidential Range in New Hampshire. In case anyone has such a specimen, I should wish not only to hear of it, but to see it.

It has been said of some authors that they would not be able to recognize their own species if locality labels were removed. The converse seems to be true in this group.

In the American Museum in New York last spring I found a series which I declared were mixed. I separated them into *angulidens* and *excelsa.* After so separating them, I examined the locality labels. All that I had called *angulidens* were labeled Colorado and all the *excelsa* bore the label Laggan. *Excelsa,* however, was taken by myself in the White Mountains. But if anyone has *angulidens* from any region outside of Colorado, I should be glad to see the specimens. Similarly I would like to see *sackeni* from any locality other than Colorado, or *snowi* from any locality other than New Mexico. If anyone can confirm or disprove the above views, I should be indebted if he will correspond with me.

A Collecting Trip in Colombia.

Mr. E. B. Williamson, of Bluffton, Indiana, the well-known student of the Odonata, left his home on November 25 for a trip in Colombia, South America, where he will devote his energies to collecting his favorite insects. A card dated December 4 announced his arrival in Panama, where he expected to remain until the 7th. His plan is to return home in March.

A New Genus of Bothynotinae, Miridae (Heter.).

By M. WIRTNER, Monte Casino, Covington, Kentucky.

NEOBOTHYNOTUS new genus.

This, our first American genus of Bothynotinae may easily be recognized by examining the membrane which is pilose above and below.

Male oblong, female oval, or ovate in the short-winged female. Head subvertical, pilose, short, behind the exserted eyes, constricted, immarginate; vertex wide, somewhat convex; clypeus slightly elevated, separated at base from the frons, base on a line drawn between the antennal pits; lorae discrete; gula short, subhorizontal. Eyes medium, prominent, distinctly remote from the apex of the pronotum. Antennae inserted on a line drawn between the center of the eyes, strongly pilose, the basal joint incrassated, as long as or slightly longer than the width between the eyes; second longer than the third and fourth united, or three-fourths as long as the basal width of the pronotum, or a trifle shorter than the pronotum and the scutellum united, becoming (especially in the female) slightly thicker towards the apex. Rostrum reaching the intermediate coxae, the first joint passing the apex of the prosternum.

Prosternum triangular, sides straight and raised, its xyphus marginated; orifices of the metapleura tuberculose. Pronotum trapeziform, collar raised, hairy, posteriorly convex, towards the apex strongly declivous, basal width almost twice its length, or three times its apical width, deeply closely punctured; calli confluent at the disc forming an arc, shining, smooth. Scutellum triangular, hairy, the base covered, minutely transversely wrinkled, a carina beginning at the apex and disappearing in the depressed middle of the base.

Hemelytra rugose, hairy, lateral margins ampliated, in the male semipellucid, opaque in the female; subcosta entire, forming an embolium, cubitus also complete; the hairy cuneus and the membrane much deflected; membrane of the male very long, of the short-winged female reaching the end of the abdomen, biareolated, distinctly pubescent above and below.

Feet pilose, posterior femora reaching the apex of the abdomen, no thicker than the others. Tarsi: first joint longest, the second shortest. Claws without arolia but armed with a strong basal, acute tooth.

Neobothynotus modestus n. sp., type of the genus.

Body brown in the male, in the female piceous, shining. Head, prosternum, first joint of the antennae and the base of the second joint, the stricture, sometimes the base of the calli rufous. Head smooth, hairy, its width twice that of the eye; clypeus piceous. Rostrum in the male testaceous, in the female nigropiceous, the second joint the longest, as long as the second joint of the antennae. Antennae, apex of the second joint piceous, in some females both the first and the second joints are nigropiceous, the slender third and fourth soiled white, the third longer than the fourth.

Pronotum deeply, closely punctured, hairy, brown in the male, in the female nigropiceous, calli (base always) piceous, stricture rufous. Scutellum deeply impressed at base, hairy, piceous.

Hemelytra rugose, minutely punctate, a row of more evident punctures on the subcosta, claval suture and on the commissure, the color the same as that of the pronotum and of the pilose cuneus. Membrane smoky, iridescent, rugose, pubescent above and below, its length in the male longer than the basal width of the pronotum, in the macropterous female as long as, and in the short-winged female three-fourths as long as the basal width of the pronotum; apex of the large cell wide, at the short round angle of this cell there are signs of two very short open apical veins; a white spot on the membrane below the cuneus.

Abdominal segments of the male rufous edged with black, in the female almost or entirely piceous.

Legs of the male testaceous, of the female sometimes entirely nigropiceous, the basal acute tooth of the claws about one-third the length of the claw. One short-winged female is entirely piceous excepting the top of the head and the stricture.

Length: male 5 mm,, female 4 mm., short-winged female 3.8 mm.

Captured in September at Greeensburg, Pennsylvania, with the sweepnet in Col. Huff's park. It is also found in Illinois.

Described from twelve specimens in the college collection. *Type*: A male, Greensburg, Pa., in St. Vincent College coll., Beatty, Pa.*

The male of this species strongly resembles in color and general shape Reuter's figure (I, plate IV, vol. V, Hem. Gymn. Europae) of *Bothynotus pilosus* Boh.

*An allotype I will send to Philadelphia and a paratype to the Carnegie Museum, Pittsburgh, Pa.

Notes on the Feeding Habits of Adult Chrysopidae (Neur.).

By L. Bradford Ripley, Dep't. of Entomology, University of Illinois, Champaign, Ill.

All of the statements that I have been able to find concerning the feeding habits of adult Chrysopidae agree that "in the adult stage the insects feed little, or not at all."[1] This quotation, from Dr. J. B. Smith, refers to the genus *Chrysopa*. Howard informs us similarly that the adult *C. oculata* "does not feed,"[2] and Wildermuth, in his recent paper on the California Green Lacewing Fly,[3] states that "neither sex has ever been noted by the writer to feed in the adult stage, even when food was offered, and doubtless all of the lacewing flies take little or no food in this period of their existence."

In the summer of 1916, in Glastonbury, Connecticut, the writer had occasion to keep in confinement many adults of *C. oculata* for the purpose of procuring eggs for embryological studies. The observation of these insects has afforded conclusive evidence contradicting this prevalent statement.

A large scarlet aphid common in New England, on the stems of Golden Glow (*Rudbeckia laciniata*), having been introduced into the cage, the smaller specimens were vigorously attacked by the chrysopids. The prey was grasped in the mandibles by the end of the abdomen, the juices sucked and the skin completely eaten. One female, while under observation, ate three aphids in rapid succession, but refused more food. These adults also drank from drops of water. When apple leaves were put in the cage, the insects ran over them rapidly, with their heads almost touching the leaves, as if searching for small insects or eggs.

Adults of both sexes, soon after being collected, or a few hours after feeding, were often observed to discharge black pellets from the anus, which appeared to be animal matter, as

[1] John B. Smith, Sc.D., Economic Entomology, p. 74.

[2] L. O. Howard. Insects, p. 225.

[3] V. L. Wildermuth, California Green Lacewing Fly. Journal of Agricultural Research, Vol. 6, No. 14, 1916.

viewed with the microscope, so finely ground and digested, however, that no tissue was distinguishable.

After a few days of confinement without food or water, females invariably died a premature death, with many eggs in the abdomen unlaid, whereas fed females usually laid all, or nearly all, of their eggs.

Unfed females were observed to extract eggs from their own abdomens with their mandibles, and to devour them rapidly one after another. The performance of this operation by one individual was witnessed three times in less than one minute. Only those insects which had been confined without food and water for a few days were seen to resort to this source of nutriment. In several instances, females were seen trying to extract eggs in this manner without success, the eggs being, presumably, too far within the vagina to be reached by the mandibles.

Since this egg-eating habit is displayed only by unfed individuals, it is concluded that hunger is the chief stimulus to this reaction. Scarcity of food for adult Chrysopidae may have been of sufficiently frequent occurrence in the past to account for the development of the preservative instinct exhibited by the females, of eating the eggs. This instinct, however, does not permit the insect to subsist on its own eggs until its abdomen is emptied of them, as evidenced by the fact of death by starvation with many eggs still in the abdomen. The rate at which eggs are available for extraction by the mandibles is not sufficient to satisfy the demands for nutriment; however, when food is scarce, this egg-eating habit is doubtless of great preservative value in allowing the females to subsist from one meal of insects to another.

To summarize: (1) Adults of both sexes feed upon smaller, soft-bodied insects, drink water and discharge solid excrement. (2) Unfed females die of starvation, leaving a large portion of their eggs unlaid. (3) Females on the point of starvation eat their own eggs, extracting them from the abdomen as frequently as they are available—a preservative instinct.

Thus Chrysopidae are of even greater economic importance

than has been known, since the useful work of the notoriously predaceous larva is supplemented by the predaceous work of the adults. In the struggle for existence, however, the position of this family is decidedly less advantageous than formerly supposed, inasmuch as, not only the larval food, but also the amount of food available for the adult insect, is an important factor in determining the number of individuals.

A Species of Macrotracheliella found in New England (Hemip., Anthocoridae).

By H. M. PARSHLEY, Bussey Institution, Harvard University.

While examining not long ago some unmounted insects belonging to the Boston Society of Natural History, I found an Anthocorid bug unlike anything I had previously seen. I sent it with some other doubtful specimens to Mr. O. Heidemann, who returned it without comment as "*Macrotracheliella* sp.," another instance of my friend's well-known acumen and willingness to give others the benefit of his great knowledge of the Hemiptera. This genus was founded by Champion in the *Biologia*[1] to contain a new species, *M. laevis*, of which he had examples from Mexico and Panama. The occurrence of a very closely related species in New England is one of those troublesome facts of distribution which every now and then arise to confront us with our profound ignorance of what is or has been really going on, notwithstanding our theories of zones, soils, land-bridges, and so forth.

The specimen at hand agrees in every particular with Champion's generic diagnosis but differs from *M. laevis* in certain characters of specific value. For those who do not have access to the *Biologia* it may be of service to present the chief characters of the genus, especially as it has not been reported hitherto as occurring in the Nearctic region.

MACROTRACHELIELLA Champion.

Anterior lobe of pronotum narrow and conical forming a continuous outline with the elongated cylindrical basal part of

[1]Biol. Cent.-Am., Ins., Rhynch. II., p. 322, Tab. 19. figs. 21, 22, 22a.

the head, apical collar present; eyes distant from the front of the pronotum; rostrum short, not reaching the front coxae. Embolium narrow, linear; membrane with only one vein, situated near the inner margin. Mesosternum greatly developed, convex, with a short anterior carina; metasternal orifices long, curved forward, reaching the lateral and anterior borders of the metapleurae. Legs slender, the femora somewhat thickened. Body oblong, shining, clothed with sparse hairs. Wing-cell with a hamus.

This genus belongs to the Anthocorinae and should be placed before *Anthocoris* which is easily distinguished from it by the much less elongate head and pronotum and the 4-veined membrane. *Triphleps* contains smaller species with 3-veined membrane.

Macrotracheliella nigra sp. nov.

Shining black, third antennal segment narrowly yellow at base, tarsi dark brown, paler beneath. First antennal segment not quite reaching apex of head, second about twice the length of the first, enlarged in apical half, third somewhat longer than the first, fourth missing. Pronotum impressed just within the slightly knobbed lateral angles, posterior lobe convex, very finely punctate, declivous, meeting the impunctate horizontal anterior lobe in a sharply defined transverse line. Scutellum convex and finely punctate basally, the apical half strongly depressed, flat, transversely rugose, acute at apex. Hemielytra very obscurely punctate, the corium longitudinally convex, the cuneus deflected and slightly concave; membrane extending beyond apex of abdomen, brown, narrowly pale along lateral half of cuneal margin and at the inner basal angle. Clothed above and below with very sparse erect hairs, legs and antennae sparsely pilose, the pubescence of the tibiae finer and close. Length 2.5 mm.

Holotype ♀, Chilmark, Massachusetts, 14 Aug., 1911 (J. A. Cushman), in the collection of the Boston Society of Natural History.

Closely related to *M. laevis* Champ., to judge by the description and figures, but differs from that species in having the third antennal segment pale only at base and the hemielytra entirely black while the first and second antennal segments are shorter. (In the type specimen the fourth antennal segments have been broken off).

ENTOMOLOGICAL NEWS.

PHILADELPHIA, PA., JANUARY, 1917.

The News for 1917.

The rising cost of living and of everything else has begun to affect the NEWS but we shall not let it affect our subscribers if it be possible to avoid doing so. We shall not raise our subscription price or reduce the number of pages as long as our many present friends stand by us. We think we have been giving as much (or more) in return for the annual sum of two dollars as any other entomological journal in the world and we don't propose to fall behind our past record in this respect. On the other hand, to run into bankruptcy would defeat the very objects for which the NEWS exists and it therefore seems advisable to adopt the following precautionary measure. We shall limit the number of plates in each issue to one or two, except where authors supply the blocks for the plates accompanying their articles or pay for making blocks. This may mean that illustrated papers may be somewhat retarded in their publication, but the ways to secure earlier appearance are obvious.

We take this opportunity of reminding our contributors of the desirability of carefully considering the limitations under which reproduction of drawings and of photographs can be made. When these are to be reduced in size in order to come within the dimensions of an average NEWS plate (6½ by 4 inches), it must be remembered that the details of drawing or of photograph must be so far apart that, when brought *nearer* together by the necessary amount of reduction of the whole plate, they will still be far enough apart to be distinct. This also involves the distances of the various figures on the same plate from each other. Also, since all the figures on a given plate are reduced at once and made into a single block, all the figures must be on such a scale as to bear the same amount of

reduction. If a plate must be printed from several blocks its cost is increased, for several blocks are more expensive than one single block whose area is equal to the sum of the several. A little careful measurement of the "copy" and calculation will often save much time and disappointment in the appearance of the published illustrations.

Drawings can usually be reproduced in zinc, but drawings with fine details and photographs require copper, which at present costs twice as much as zinc. All drawings must be made with jet black ink, not the common bluish writing ink which will not photographically reproduce. A half-tone, which is the form in which photographs are reproduced, ordinarily shows the background of the photograph, hence if several photographs are associated side by side to form a plate and their backgrounds are of different shades of color, this difference shows also in the half-tone when printed and produces a displeasing effect. All cutting away of backgrounds or any manipulation necessary to remove imperfections in the photograph is only done at additional charge.

Questions and Answers.

The NEWS invites those having any entomological questions which they wish answered to send such in for publication under this heading, and also invites answers from its readers or others to these questions. Questions and replies should be as brief as possible and the Editors reserve the right not to publish any of either class which seem to them objectionable or inappropriate. Those sending in contributions to this department will please indicate whether they wish their names or merely one or more initials to appear in connection with their communications, but all such must be accompanied by the full name and address of the writer for the information of the editors.

QUESTION No. 3—Green geometers usually lose much of their color in the relaxing jar. Can this be avoided and how? I would like to hear from Lepidopterists on the subject.—G. C.

Notes and News

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

Psyllia buxi Linn. in New Jersey (Homop.).

During the summer of 1916 adults of this species were taken at Springfield, Rutherford, East Orange and Riverton on boxwood plants growing in nurseries. The plants on which they were found were old and well established, having been imported a number of years ago, so there is no doubt about the species being established in New

Jersey. The curled condition of the foliage due to larval activities is quite a common occurrence on boxwoods imported from Holland and it was undoubtedly introduced from this country. It is probably also established in other parts of New Jersey, especially on estates where boxwood hedges and plantings are common and surely must occur in other Eastern States too, inasmuch as it has been mentioned at different times in the News Letters of the Federal Horticultural Board as being found on imported boxwoods. Considering its method of overwintering, it is evidently being introduced more or less regularly every time imported boxwoods are received in this country.

In Smith's "Cat. Ins. of N. J.," p. 109, can be found the following note: "*Psylla buxi* Linn. An imported species on *Buxus sempervirens*, which has been found in Jersey City." This does not however lead one to assume that it is established in New Jersey. In Van Duzee's Check List of the Hemiptera of America, North of Mexico, it is not recorded.

A brief account of *Psyllia buxi* in Holland and its importance as a pest can be found on page 176 of Vol. I, "Ziekten en Beschadigingen der Tuinbouwgewassen" by M. Van Den Broek en P. J. Schenk. This article states that adults appear in May and June depending on the temperature and locality and that later about the time the plant has formed new buds for next season, each female lays from one to three eggs on the leaves at the tips of the branches. These hatch before winter and the nymphs which are covered with a white, waxy substance hibernate under the buds in the axils of the leaves. When the buds develop in the spring, the whitish masses covering the nymphs are readily seen. The injury resulting from the activity of the nymphs consists in a curling of the leaves so that they resemble little cups or hollow hemispheres.

In New Jersey adults were taken about the middle of July and also in August and the tips of the branches of many plants showed the characteristically curled leaves. According to the Dutch authors, good results were obtained in the way of control by spraying in the spring with a 7.5 per cent. of soluble carbolineum emulsion. As far as is known, no remedial measures have ever been attempted against this insect in New Jersey. In fact, many persons have assumed that the peculiar curling of the leaves is characteristic of boxwoods and certainly no great disfigurement takes place provided the infestation is slight.

H. B. Weiss & E. L. Dickerson, New Brunswick, N. J.

The O. B. Johnson Entomological Collection.

Orson Bennett Johnson, professor emeritus of zoology in the University of Washington, has given the university his valuable entomological collection.—*Science*, Nov. 3, 1916, p. 635.

Phylogeny of Ant Lions (Neur.).

There has been a general agreement in looking upon the Nymphidae, a small family confined to Australia, as representing the probable type from which the Myrmeleonidae have been developed. But this agreement is not, so far as I can ascertain, based on any definite evidence, but merely on a general impression of the Myrmeleonid-like appearance of the well-known *Nymphes myrmeleonides* Leach. We now have definite venational evidence to go upon, and we may say at once that it fully establishes the claim of the Nymphidae to be regarded as the remains of the ancestral group from which the Myrmeleonidae have sprung, the course of evolution being marked by gradual reduction in the general density of venation, in the size and prominence of the pterostigma and in the length of the antennae (which become stouter and clavate) and by a change from a wandering (probably nocturnal), carnivorous larva, with omnivorous tastes, to a sedentary, pit-dwelling, ant-feeding form.—R. J. TILLYARD. (Condensed from *Proceedings, Linn. Soc. New South Wales*, 1915, pt. 4, pp. 743, 745. 1916.)

Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded.

The numbers in Heavy-Faced Type refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

The records of papers containing new species are all grouped at the end of each Order of which they treat. Unless mentioned in the title, the number of the new species occurring north of Mexico are given at end of title, within brackets.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

4—The Canadian Entomologist. **5**—Psyche. **9**—The Entomologist, London. **10**—Nature, London. **47**—The Zoologist, London. **68**—Science, New York. **102**—Proceedings, Entomological Society of Washington. **143**—Ohio Journal of Science, Columbus, Ohio. **153**—Bulletin, American Museum of Natural History, New York. **198**—Biological Bulletin, Marine Biological Laboratory, Woods Hole, Mass. **240**—Maine Agricultural Experiment Station, Orono. **251**—Annales, Sciences Naturelles, Zoologie, Paris. **285**—Nature Study Revue, Ithaca, N. Y. **313**—Bulletin of Entomological Research, London. **324**—Journal of Animal Behavior, Cambridge. **394**—Parasitology, Cambridge, England. **421**—Report, State Entomologist on the Noxious and Beneficial Insects of Illi-

nois, Urbana. **447**—Journal of Agricultural Research, Washington. **450**—Apuntes de Historia Natural, Buenos Aires. **457**—Memoirs of the Coleoptera by Thos. L. Casey, Washington. **478**—Miscellaneous Publications, Museum of Zoology, University of Michigan. **540**—The Lepidopterist. Official Bulletin, Boston Entomological Club.

GENERAL SUBJECT. Bodkin & Cleare—Notes on some animal parasites in British Guiana, **313,** vii, 179-90. **Brown, K. B.**—Microtechnical methods for studying certain plant-sucking insects in situ, **68,** xliv, 758-9. **Turner, C. H.**—Literature for 1915 on the behavior of spiders and insects other than ants, **324,** vi, 383-99. **Ramsay, E. P.**—Hints for the preservation of specimens of natural history, 32 pp. (Australian Museum, Miscel. Pub. No. 3).

PHYSIOLOGY AND EMBRYOLOGY. Hoy, W. E., Jr.—A study of somatic chromosomes. 1. The somatic chromosomes in comparison with the chromosomes in the germ cells of Anasa tristis, **198,** xxxi, 329-63.

MEDICAL. Dunn, E. R.—Mosquitoes and man again, **68,** xliv, 788-90.

ARACHNIDA, ETC. Levy, R.—Contribution a l'etude des toxines chez les araignees, **251,** Ser. X, i, 161-399. **Robinson, H. W.**—Some species of tick infesting polecat and otter [Bibliog. notice], **47,** 1916, 399.

NEUROPTERA, ETC. Harrison, L.—The genera and species of Mallophaga, **394,** ix, 1-156. **Williamson, E. B.**—Directions for collecting and preserving specimens of dragonflies for museum purposes, **478,** No. 1, 15 pp.

HEMIPTERA. Baker, A. C.—A synopsis of the genus Calaphis [2 n. sps.], **102,** xviii, 184-89. **Baker & Turner**—Rosy apple aphis, **447,** vii, 321-44. **Cushman, R. A.**—The native food plants of the apple red-bugs, **102,** xviii, 196. **Van Duzee, E. P.**—Note on genus Hyoidea, **5,** 1916, 141.

Osborn & Drake—Some new sps. of nearctic Tingidae [7 n. sps.], **143,** xvii, 9-15.

LEPIDOPTERA. De Gryse, J. J.—The hypermetamorphism of the lepidopterous sapfeeders, **102,** xviii, 164-8. **Heinrich, C.**—On the taxonomic value of some larval characters in the L., **102,** xviii, 154-64. **Lathy, P. I.**—A new South American Papilio, **9,** 1916, 241-2. **Reiff, W.**—Lepidopterological items from Massachusetts, **540,** i, 3-5. **Wolley-Dod, F. H.**—A change of synonymy in Xylomiges, **4,** 1916, 367-8.

Bartsch, R. C. B.—Two new forms of Catocalae, **540,** i, 3. **Beutenmuller, W.**—Description of a new sesiid, **4,** 1916, 372. **Busck, A.**—Descriptions of new No. American micro L. [1 n. g., 15 n. sps.], **102,** xviii, 147-54. **Eastman, W. F.**—A new form of Catocala pura, **540,** i, 2. **Gibson, A.**—A n. sp. of tortrix of economic importance from Newfoundland, **4,** 1916, 373-5. **Swett, L. W.**—New species of Geometridae from California, **450,** i, 5-6 (cont.).

DIPTERA. Howard, L. O.—A curious formation of a fungus occurring on a fly, **102,** xviii, 196-7. **Hutchison, R. H.**—Notes on the larvae of Euxesta notata, **102,** xviii, 171-77. **Knab, F.**—Egg-disposal in Dermatobia hominis, **102,** xviii, 179-83. **Metcalf, C. L.**—Syrphidae of Maine, **240,** Bul. 253. **Walton, W. R.**—The tachinid genus Argyrophylax, **102,** xviii, 189-92. **Webb & Hutchison**—A preliminary note on the bionomics of Pollenia rudis in America, **102,** xviii, 197-9. **Weiss, H. B.**—Monarthropalpus buxi in N. J., **5,** 1916, 154-6.

Brues, C. T.—A remarkable n. sp. of Phora (Trineura), **4,** 1916, 394-5. **Parker, R. R.**—Sarcophagidae of New England, III, Sarcofahrtia ravinia, new gen. and sp., **5,** 1916, 131-9.

COLEOPTERA. Allard, H. A.—The synchronal flashing of fireflies, **68,** xliv, 710. **Barber, H. S.**—A new sp. of weevil injuring orchids, **102,** xviii, 177-9. **Craighead, F. C.**—The determination of the abdominal and thoracic areas of the cerambycid larvae as based on a study of the muscles, **102,** xviii, 129-46. **Forbes, S. A.**—Life history and habits of the northern corn root-worm (Diabrotica longicornis), **421,** xxviii, 80-86. **Frost, C. A.**—Collecting notes and random observations of the Maine C., **4,** 1916, 381-90. **Hyslop, J. A.**—Pristocera armifer parasitic on Limonius agonus, **102,** xviii, 169-70. **Sell, R. A.**—Ways of the western flower beetle, **285,** xii, 332-4.

Casey, T. L.—Further studies in the Cicindelidae [many new]; Some random studies among the clavicornia [many new], **457,** vii, 1-34; 35-292. **Wickham, H. F.**—A new brachyelytrous trogositid beetle from Colorado, **5,** 1916, 146-8.

HYMENOPTERA. Bradley, J. C.—Taxonomic notes on Agathinae (Braconidae), **5,** 1916, 139-40. **Gray, H. St. G.**—Scarcity of wasps, **10,** 1916, 209. **Middleton, W.**—Notes on Dianthidium arizonicum, **102,** xviii, 193-5. **Wells, M.**—Literature for 1915 on ants and myrmecophils, **324,** vi, 400-406. **Wheeler, W. M.**—Note on the Brazilian fire-ant, Solenopsis saevissima; An anomalous blind worker ant, **5,** 1916, 142-3; 143-5. **Williams, L. T.**—Notes on the egg-parasites of the apple tree tent-caterpillar (Malacosoma americana), **5,** 1916, 148-53.

Cockerell, T. D. A.—Some California bees [3 new], **4,** 1916, 391-3. **Girault, A. A.**—A new genus of omphaline Eulophidae from N. America [1 n. sp.], **9,** 1916, 249-50. **Rohwer, S. A.**—Notes on the Psammocharidae described by Provancher, with description of a n. sp., **4,** 1916, 369-72. A new bee of the genus Dianthidium, **102,** xviii, 192-3. **Viereck, H. L.**—New sps. of the bee genus Andrena in the American Mus. of Nat. History [4 new], **153,** xxxv, 729-32.

THE LEPIDOPTERIST: Official Bulletin of the Boston Entomological Club.

Volume One, number one (four pages) of this publication has appeared. The editor is Rudolf C. B. Bartsch, Roslindale, Massachusetts. The price of subscription is thirty-five cents a year. The last publication devoted to Lepidoptera exclusively was "Papilio" and it died about thirty-three years ago. "The (Boston) Club has one feature which is new to entomological societies of this country. After each regular business meeting the Club holds an auction sale of specimens belonging to various members. A ten per cent. commission is charged which is placed in the treasury of the Club." Can you imagine such a thing in Boston! The Club advocates the publication of a priced catalog of lepidoptera to facilitate exchange among collectors. The editor appears to be the president of the "Kato Kalo Co.," which deals in the Catacolae of the world. A new species and several new varieties are described, but the dominant idea of the Club and the journal seems to be commercialism. There may be a place in the sun for a new journal of this kind which will appeal to the beginner and the collector and we will watch the experiment with interest. If something is not done for the embryo entomologist there is danger that the veterans may die off much faster than the ranks are recruited. The activities of our older entomological societies are too profoundly scientific to encourage or interest the tyro, who is to become the scientific entomologist of the future. —H. S.

Doings of Societies.

American Entomological Society.

Meeting of October 26, 1916, in the Academy of Natural Sciences of Philadelphia. Dr. Henry Skinner, president, in the chair. Eleven persons present.

Dr. W. J. Holland and Dr. W. L. Abbott were elected to resident membership.

Mr. Rehn made some interesting remarks on the Arizona field work of the past summer carried on by Dr. F. E. Lutz and himself, in the interests of the Academy and of the American Museum of Natural His-

tory. Several particularly interesting ranges of mountains in southern Arizona were visited and examined for general entomological material, but particularly for certain Lepidoptera and Orthoptera. The results were quite satisfactory and much information and evidence relative to the distribution and occurrence of insects were secured. The remarks were illustrated by a map of the region visited.

These remarks led to a discussion on night collecting with light, and Dr. Skinner mentioned collecting Sphingidae in Cuba late at night or early in the morning when the insects became chilled and in this condition on walls, etc., could be easily bottled, and thus perfect specimens secured.

Orthoptera.—Mr. Laurent exhibited nymphs, adults and egg-masses of *Paratenodera sinensis,* and read a paper by Prof. W. Lochhead in the *Report of the Entomological Society of Ontario* for 1914, page 64, speaking of the writings of Jean Henri Fabre, from which he quotes statements regarding the Praying Mantis (probably *Mantis religiosa*).. *Paratenodera sinensis* female, as observed around Philadelphia, does not differ from what Fabre states for *Mantis religiosa.* On September 20th Mr. Laurent placed a female in a large cage along with three males. Within five minutes a male copulated with the female, and before the day was over the "husband" paid for his rashness with his life. The female ate the entire insect excepting the two hind legs and wings. From the 20th of September until the 14th of October she devoured six husbands—when she died without laying eggs. Although there were at all times from three to six males in the cage, yet the female only molested those that copulated with her. In the vicinity of Philadelphia the eggs of *sinensis* hatch about the middle of May. By the end of August the majority of the insects are fully developed, and from then on to about the 20th of October mature specimens can be captured. These remarks were followed by discussion by Messrs. Wenzel, Hornig, Skinner and Ilg.

Coleoptera.—Mr. Wenzel exhibited a specimen of typical *Megetra vittata* and a very large specimen supposedly of this species lately received from the Hueco Mountains, New Mexico, northeast of El Paso.—ROSWELL C. WILLIAMS, JR., *Recording Secretary.*

Newark Entomological Society.

Meeting of November 12, 1916, held in the Newark (New Jersey) Public Library. Pres. Buchholz in the chair and twelve members present. Mr. A. Goerner of Jersey City was elected a member.

Lepidoptera.—Mr. Rummel exhibited *Apatura celtis* from Hagerstown, Maryland, VI-29 and *Apatura clyton* from Arlington, New Jersey, VIII-4, and spoke of his experience with and of the secretive habits of the adults of the latter species. He also mentioned finding

thousands of the larvae on hackberry during October and later in the season under foliage at the bases of the trees. He exhibited hundreds of second stage larvae which he had collected at Arlington. Mr. Weiss showed two species of Geometridae which had been captured by the sticky nectar of the mosquito plant, *Vincetoxicum japonicum*, and also dried specimens of the plant.

Hymenoptera.—Mr. Weiss spoke of finding the European saw fly, *Diprion simile* Hartig, in New Jersey this past summer, and of its injury to pines and exhibited a male and a female.

Coleoptera.—Mr. Weiss exhibited two orchid weevils new to New Jersey, these being *Acypotheus orchivora* Blackb., and *Diorymellus laevimargo* Champ., both being injurious to greenhouse orchids, the latter species only recently having been described by Champion.—HARRY B. WEISS, *Secretary.*

Entomological Section, The Academy of Natural Sciences, Philadelphia.

Meeting of November 23, 1916. Nine persons present. Mr. R. C. Williams, Jr., Vice-Director, presiding.

Mr. McAtee, of Washington, D. C., spoke of his interest in working up the local fauna of that vicinty.

Diptera.—Mr. Hornig reported the finding of fresh pupae of the house fly on the 20th of this month which he considered noteworthy in view of the prevailing cold weather.

Lepidoptera.—Mr. Ilg exhibited some specimens of the Io moth which he said are emerging now in his room. He said that birch was the food plant of these moths. Dr. Calvert called attention to a communication by Dr. Carpenter in the *Proceedings of the Entomological Society of London* (for 1915, pages lxix-lxxii) relative to his observations in South Africa of birds eating butterflies. The birds seemingly preferred the Lycaenidae to the Pierinae. Mr. McAtee spoke of his investigation of birds as agents in the destruction of insects. He stated that, although there seems to be conclusive proof that birds eat butterflies, the quantity consumed evidently cannot materially affect their survival. He further stated that according to his observations a species is never exterminated by its natural enemy.

Orthoptera.—Mr. Rehn made a few interesting remarks on the auditory foramina found on the cephalic tibiae of Tettigoniidae and Gryllidae, with particular reference to the external development of the same found in certain genera of the Gryllotalpinae. The features separating *Gryllotalpa* and a new genus related to the same were discussed and material illustrative of this exhibited. Mr. Rehn said in answer to a question that the function of the so-called auditory organs has not been definitely determined. A lengthy discussion followed as

to the correlation of certain characters such as size of the stridulating apparatus and ocelli in short and long wing forms of Orthoptera; also regarding the correlation of the size of the eyes and the habits of animals in relation to light and darkness.

Meeting of December 11, 1916. Eleven persons present. Director Philip Laurent presiding.

Coleoptera.—Mr. Laurent exhibited a collection of twenty-six species of Coleoptera and a number of other insects that he had collected in molasses traps during the past summer. The traps consisted of jelly glasses containing about an inch of molasses, which were sunk in the ground so that the tops of the glasses would be level with the surrounding surface; about an inch and a half above the top of the glass a flat stone or piece of wood was placed so as to keep out the rain. The speaker stated that few collectors ever tried this way of collecting. The principal beetles that fall victims to the traps are Carabidae.

Mr. Hebard spoke of his experience with molasses traps in collecting insects, especially Orthoptera. He mentioned a time while collecting in New Jersey, during the migration of the army worm when his traps were so filled with specimens of this species that he had to give up his quest for Orthoptera. He further stated that sinking these traps at various places having diverse environments resulted in interesting captures and showed that certain species are more confined to certain localities or habitats than is generally realized. The speaker also stated that he has tried to find specimens of some of the species caught in such traps, by making thorough search over a large area around the traps, looking under stones, pieces of wood, etc., but never has had any success. He said that this method of collecting, viz., with molasses traps, does not seem to be satisfactory in the tropics. General discussion followed principally on the apparent abundance of one sex of a species while the other sex is seldom or never seen.

Mr. Williams called attention to some passages in "The Nightside of Japan," by Fujimoto, which describes the interest Japanese take in the song of insects; a society has been formed in Tokyo for hearing insects sing, the "Mushi-Hanachi-Kai" (Meeting of Setting Insects Free).

The following officers were elected for the year 1917: *Director,* Philip Laurent; *Vice-Director,* R. C. Williams, Jr.; *Treasurer,* E. T. Cresson; *Conservator,* Henry Skinner; *Secretary.* J. A. G. Rehn; *Recorder,* E. T. Cresson, Jr.—E. T. CRESSON, JR., *Recorder.*

The number of Entomological News for December, 1916, was mailed at the Philadelphia Post Office December 6, 1916.

EXCHANGES.

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued

Wanted—All kinds of *Catocala* eggs and living pupae of *luna, cecropia polyphemus* and tiger moths. Cash or exchange.—Mrs. Robert Milde, Lewiston, Minn.

Rare California *Chrysobothris* and other California Buprestidae especially *Acmaeodera* to exchange for eastern or exotic Buprestidae.—Richard T. Garnett, 3600 Broadway, Oakland. Cal.

Will purchase for cash, rare Catocalae and unidentified Geometridae from the West and South.—Samuel E. Cassino, Little Folks Magazine, Salem, Mass.

Wanted: A few good specimens of the common katydid, *Phylloptera camellifolia* Fab.; will give cash or insects of any order.—W. Marchand, 29 Vandeventer Ave., Princeton, N. J.

For Exchange—*Ochrosidia villosa* ♂ and ♀. Supply of females limited; also other Coleoptera. Send lists.—H. A. Kaeber, 2349 So. Lambert St., Phila., Pa.

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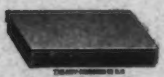

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